PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

DEC 17 1926

See Yellow Section for Contents, Market Review

IRON TRADE REVIEW

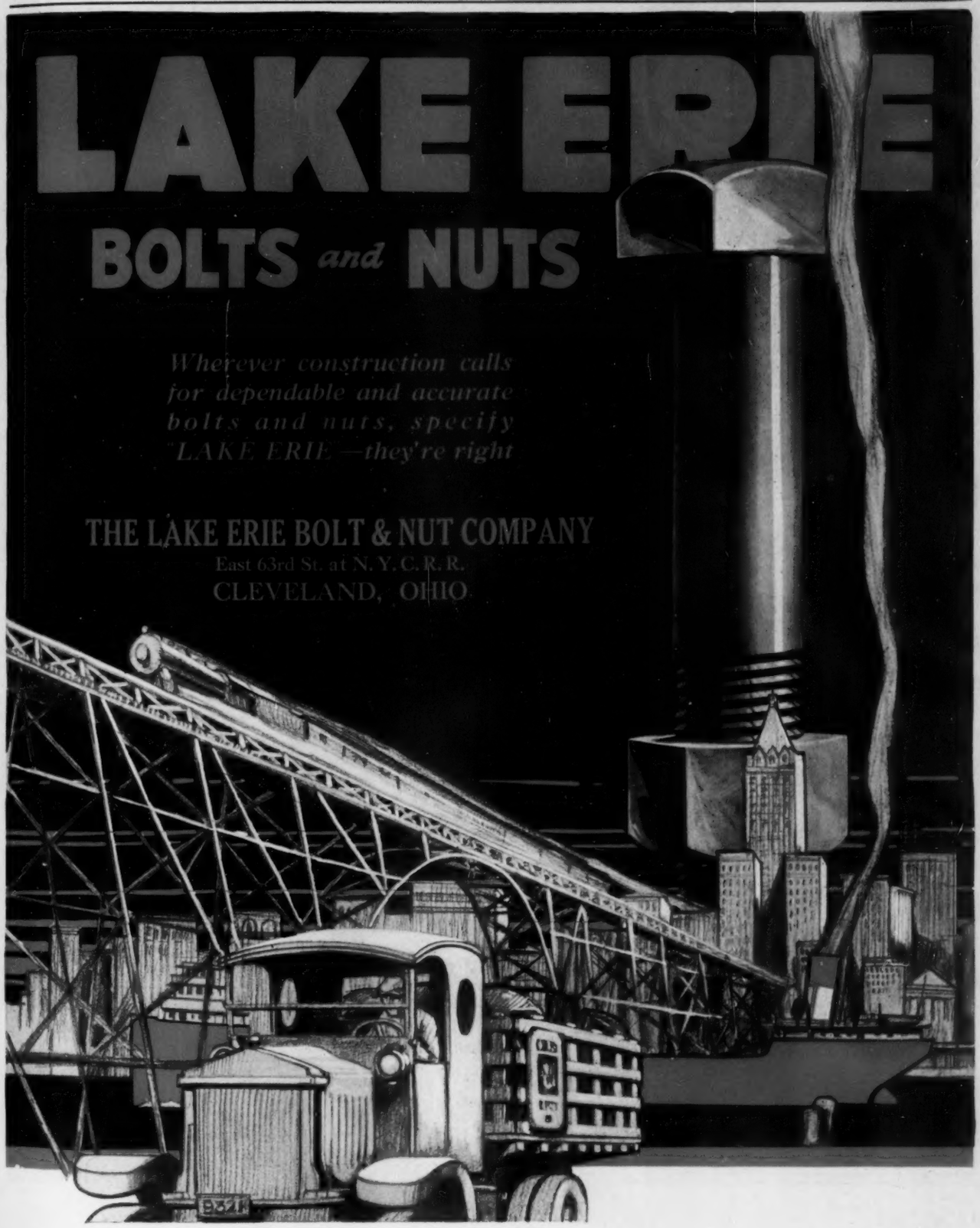
Registered U. S. Patent Office

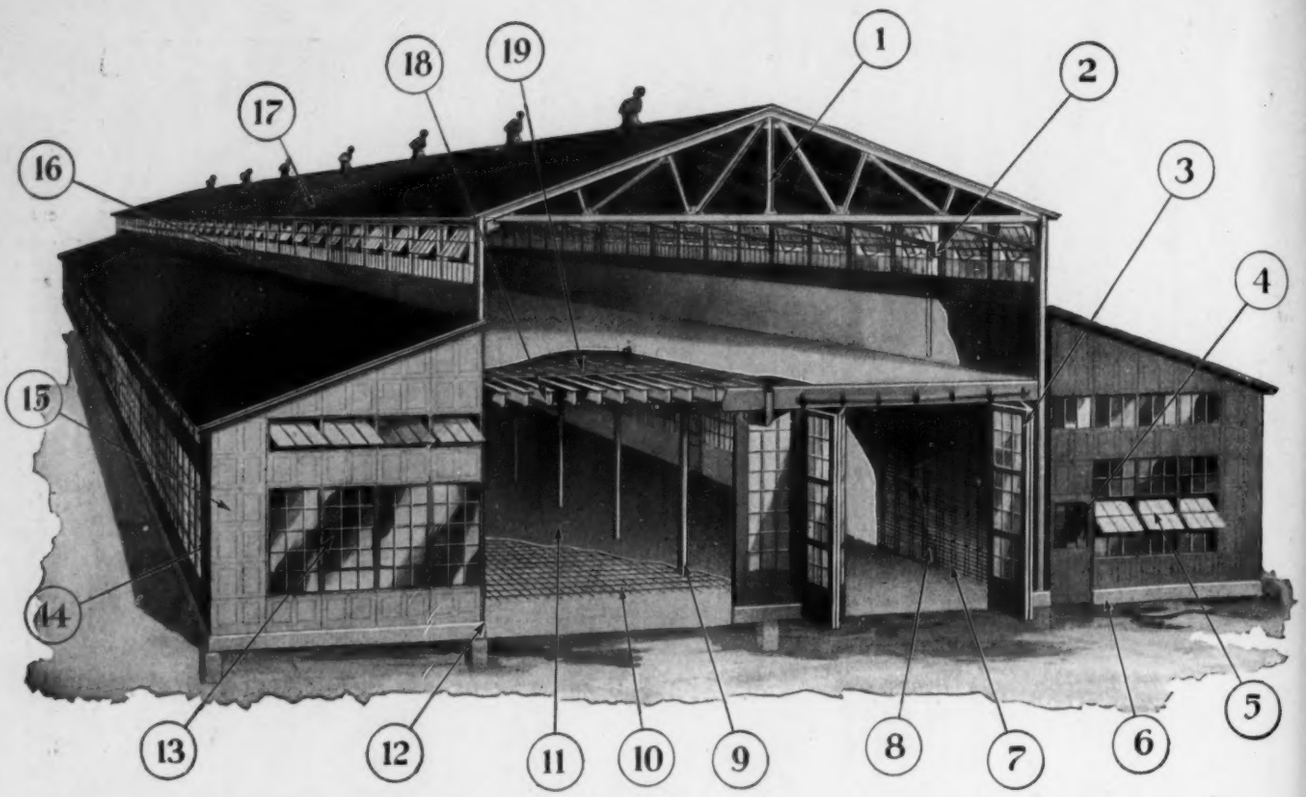
Published Weekly
VOL. LXXIX No. 25

CLEVELAND, O., DECEMBER 16, 1926

Entered as second-class matter at the post-office in Cleveland, Ohio, under the act of March 3, 1879

Six Dollars a Year
Single Copy 25 Cents


LAKE ERIE
BOLTS and NUTS
Wherever construction calls for dependable and accurate bolts and nuts, specify "LAKE ERIE"—they're right
THE LAKE ERIE BOLT & NUT COMPANY
East 63rd St. at N. Y. C. R. R.
CLEVELAND, OHIO



BETTER INDUSTRIAL BUILDINGS

1. Truscon Standardized Structural Steel Trusses.
2. Truscon Mechanical Operators for Controlling Sash Ventilators.
3. Truscon Seamless Tubular Rail Steel Doors, Fourfold Type.
4. Truscon Standard Steel Doors, Swing or Sliding Types, Single or Double.
5. Truscon Projected or Pivoted Windows for the Office.
6. Truscon Reinforcing Bars of New Billet Steel for Concrete.
7. Truscon Steel Channels for Partition Studding.
8. Truscon Metal Lath and Plaster Partition.
9. Truscon Steel Columns.
10. Truscon Welded Steel Fabric Reinforcing for Concrete.
11. Truscon Floor Hardener for Concrete Floors.
12. Truscon Edge Protectors for Concrete Corners.
13. Truscon Steel Windows with Center Pivoted Ventilators.
14. Truscon Copper Steel Standard Wall Panels.
15. Truscon Steel Paints for Exterior and Interior Maintenance.
16. Truscon Special Putty for Glazing Steel Windows.
17. Truscon Interlocking Steel Roofing or "Steel-deck" Roofs.
18. Truscon Plate Girder Joists (Truscon Floretyle Construction may be also used).
19. Truscon Hy-Rib Lath for Reinforcing and Forming Concrete Floor Slabs.

Truscon Buildings are All Truscon Parts

Every part of a Truscon Building originates with Truscon. That is why Truscon Better Industrial Buildings designed specially for your use and fabricated from fire safe rust-resistant copper steel actually cost you much less than any other type of permanent construction. The entire Truscon Building is manufactured completely within our great 50-acre plant. Truscon is not forced to wait. The time saved, the labor saved, the freight saved—all mean lower cost to you—and also the use of your building in about half the time ordinarily required. Investigate Truscon Buildings and Truscon Service before you build. Estimates and suggestions cost you nothing. Truscon gladly works with you to meet your requirement in the most economical way.

Write for copy of specialized catalog

TRUSCON STEEL COMPANY, Youngstown, Ohio

Warehouses and Offices in all Principal Cities

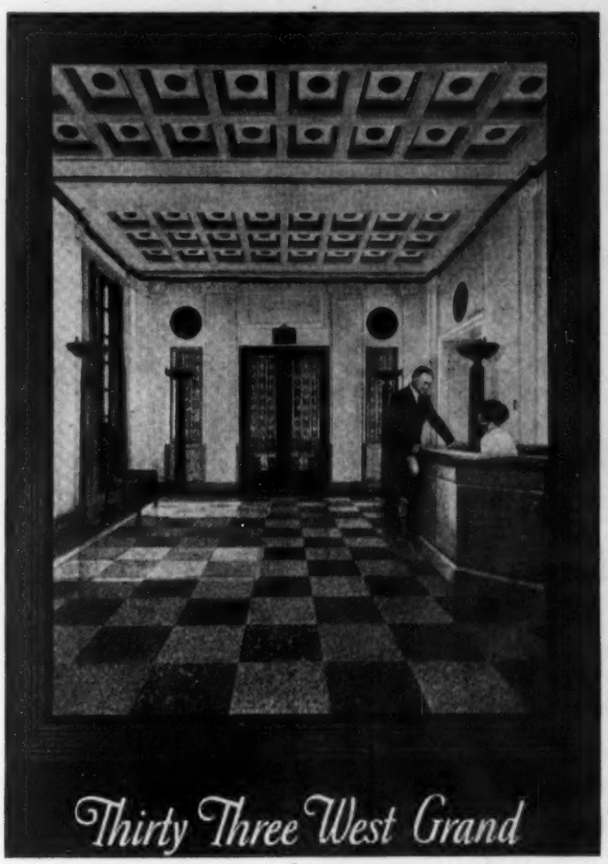
TRUSCON PERMANENT BUILDINGS

What Has Been Done for Cement Can Be Done for Steel

* * *

By E. L. Shaner

* * *



Reproduction of Cover of Booklet, "Thirty Three West Grand," showing Reception Room in New Home of Portland Cement Association.

STEEL and cement—both important materials of construction—are indispensible to modern civilization. Even if every influence of sales or merchandising were suddenly removed, both would continue to be used on a large scale.

But beyond this sphere of natural consumption is an unknown area of potential demand that responds to the stimulus of education, publicity, advertising, research, and scientific methods of selling, when properly employed.

In the early stages of America's industrial development, the natural, uncultivated market for steel and cement was sufficient and at times more than sufficient to engage existing plant to capacity. That stage has passed and now the potential markets beyond the limits of natural consumption assume new importance. To what extent have manufacturers of steel and cement capitalized the opportunities in this artificial market?

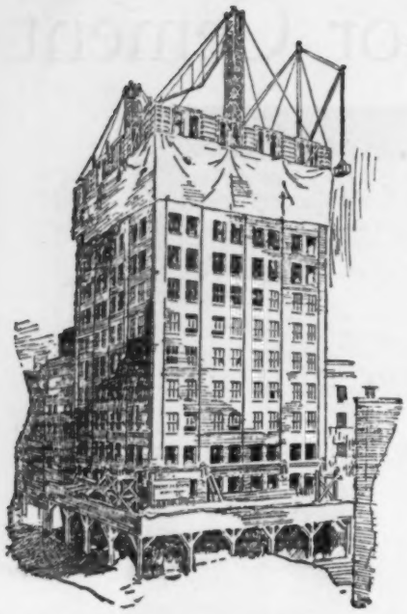
CO-OPERATIVE IDEA WINS FOR CEMENT GO-IT-ALONE POLICY HOLDS BACK STEEL

* * *

The answer reveals a singular contrast in the policies of two great industries. On one hand we have 87 competing manufacturers of cement in the Unied States, Canada, Mexico, Cuba and South America co-operating through the agency of the Portland Cement association, now in its twenty-fourth year. On the other hand we have about 140 steel producers in the United States and Canada, only 16 of whom have ever engaged in a worthwhile co-operative effort to extend their markets. It may be added that these 16 did not engage in group activities until about four years ago.

The contrast, therefore, is virtually between the united work of the cement industry and the individual effort of the steelmakers.

A fair idea of what the cement manufacturers have accomplished is afforded by "Thirty-three West Grand," an attractive 16-page booklet just issued by the Portland Cement association, Chicago. Its immediate mission is to announce the completion of the new headquarters of the association at 33 West Grand avenue, and its general and more important purpose is to again reiterate the service the organization ren-



Portland Cement association has promoted all-year-around construction

ders to the many users of cement.

To quote from the booklet: "This five-story building is made of concrete, from the caissons founding the structure on bed rock, to the skylighted roof—from the architectural stone exterior to the stained roof of the auditorium. But it is for more than a show building. It is intensely practical. Every use made of concrete at 33 West Grand had already been proved suitable for general adoption.

"Here is the workshop of 150 people whose business it is 'to improve and extend the uses of concrete,' and from there the activities of 375 more are directed."

From this it is clear that the Portland Cement association, maintained by 87 competing cement manufacturers, has a staff of 525 engaged in advancing the cause of concrete. Since 1902, it has been building prestige for concrete and winning popularity for it among those who formerly used other materials. From statements made occasionally by responsible authorities, it seems certain that more than $30,000,000 has been expended in this 24-year campaign for concrete.

That this large outlay has been wisely distributed is indicated by the marvelous organization that has been developed and by the tangible results of its work.

The outstanding features of this effective agency are enumerated in the accompanying table. The accomplishments are best reflected in the great increase in the use of cement. Production jumped from 8,482,00 barrels in 1900 to 76,549,000 in 1910, about 100,000,000 in 1920 and roughly 161,000,000 barrels in 1925.

Results Are Impressive

More convincing than statistics, however, is the evidence to be observed throughout the nation. One sees 18, 20 and 21-story buildings; long-span bridges, high stadiums, monuments, and thousands of other structures of plain or reinforced concrete, all of which could have been made of steel, masonry or wood construction. Practically every one of these projects was won for concrete because of the work of the Portland Cement association. For instance, who would have dared to design the United Brethren 21-story building of concrete if the cement association had not improved concrete and inspired public confidence in its use?

About 25 per cent of cement produced goes into public and commercial buildings, 21 per cent into miscellaneous farm uses and 24 per cent into paving and highways. Success of concrete in the first two consuming fields was won largely at the expense of steel, stone and wood. In the case of pavements and highways, concrete confronted the strong competition of brick and asphalt. The remaining uses such as sidewalks, foundations, dams, river and harbor work, etc., naturally fall to concrete except where the competition of masonry is a factor.

In other words, without the aid of the association, cement manufacturers probably would have experienced a gradually increasing demand for sidewalks, pavements, foundations, piers, dams, etc., but they would not have convinced engineers or the public that 21-story buildings or 400-foot span bridges of concrete are feasible.

Judged from results, the Portland Cement association has performed a wonderful service for its members. Even those who have suffered most from concrete's success must admit that the association's work has been effective, far-reaching and complete. It is a glowing tribute to the power of co-operative merchandising.

Would an 18-story building have been built of concrete if the Portland Cement association had not existed?

What of steel?

About four years ago a few steel producers engaged in group trade extension work, but as will be shown later, they did this not as makers of steel but rather as manufacturers of steel sheets. To all intents and purposes the 140 companies making steel ingots and blooms have never engaged in co-operative merchandising, except as noted in subsequent paragraphs.

The policy of the steel industry is

FOR CEMENT:

PORTLAND Cement association, supported by 87 companies, and with the prestige of 24 years of service behind it

Owns a new 5-story home at 33 West Grand avenue, Chicago.

Maintains district offices in 31 cities.

Has a staff of 525, including 350 experienced engineers.

Employs a field force of 290 concrete specialists who travel 9000 miles by auto and 10,000 miles by train, make 1900 calls and inspect 550 important jobs daily.

Conducts a laboratory making 45,000 tests annually.

Maintains a "sand library," largest in the world.

Maintains a technical library specializing on concrete; most complete of its kind in existence.

Conducts concrete schools in co-operation with engineering societies and colleges.

Issues numerous bulletins on use of concrete.

Furnishes every editor with "concrete reference book" annually.

Pursues a definite, well balanced advertising policy.

Success of concrete, while at the expense of steel in some directions, has been largely responsible for the rapidly expanding use of concrete reinforcing bars

one of independent effort, and the millions of dollars practically thrown away by the large steel corporations in misguided, promiscuous, sporadic attempts at merchandising is astounding in view of the otherwise able management of these companies. This does not mean that the money thus spent has not produced results, but rather that the benefits would have been multiplied many fold if the sums expended had been pooled and administered by a competent merchandising agency.

American Rolling Mill Co. has been a leader among steel companies in extending the market for its products. It has spent many millions in a single-handed effort to make it easier for consumers throughout the United States, Canada and other countries to use its ingot iron products. American Sheet & Tin Plate Co. likewise has spent large sums to inform users of the merits of its copper-steel sheets. Other sheet manufacturers have used smaller appropriations to announce their wares.

The result is that the words "Armco" and "Keystone" are well known trade names and the companies undoubtedly have received good returns on their investments. Nevertheless, the combined effort of these two leading campaigns has done little to create a widespread consciousness of the advantages of steel sheets. The individual campaigns apparently have served their purpose in promoting the prestige of certain products, but they have not won general consciousness for sheets.

However, these companies are exceptions to the general rule. The majority of the steel producing interests have no definite merchandising policy. In a few notable instances the policy consists of a sort of a challenge. "We make steel; if you want it, come and ask for it and we will quote." In many cases the sales ability of the company rests in its faculty for quoting a price that will land the business.

The severity of this indictment is somewhat softened by the fact that the need of scientific merchandising has not been as acute in the steel industry as in many other lines of production. Until recently the demand kept fair pace with capacity—a factor which discouraged ambitious merchandising effort.

Thus far we have confined discussion of merchandising efforts in the steel industry to the policies and attitudes of the producers, comprising about 140 companies in the United

FOR STEEL:

AMERICAN Institute of Steel Construction, supported by 210 structural steel fabricators, but practically unaided by steel producers

Maintains headquarters at 285 Madison avenue, New York and engineering offices at 1052 Leader News building, Cleveland.

Has a staff of about 20, including executive director, chief engineer, and several trained department heads.

Has nucleus of field force consisting of three structural engineers.

Maintains a department of architectural relations.

Has prepared a standard specification, now widely adopted, and code of standard practice.

Distributes bulletins devoted to interests of structural steel and conducts efficient publicity bureau.

Is publishing a sales manual.

Is beginning to co-operate with technical schools in educational work on steel.

Promotes new uses of structural steel.

Is launching an advertising campaign.

SHEET Steel Trade Extension committee, "subscribed to, supported and co-operated in" by 29 sheet manufacturers, 16 of whom are steel producers

Maintains a central office at 332 Oliver building, Pittsburgh, and an other office in Chicago.

Has a staff of about 30.

Has nucleus of field staff consisting of two trained engineers.

Maintains a central service office which has distributed 819,237 pieces of literature requested by readers of committee's advertising.

Publishes "Sheet Steel Service" and "Making Markets."

Promotes research and encourages better design.

Maintains a building trades extension department.

Improves channels of distribution for steel sheets.

Is introducing the subject of sheet steel in vocational, manual training and technical schools.

Pursues a definite advertising policy.

States and Canada, who make steel ingots or blooms for sale or for their own use.

Fortunately sales of steel do not depend entirely on the efforts of those who make it. Credit for any stimulation in the demand for steel beyond the limits of natural consumption must be given almost exclusively to the rolling mills and fabricators of steel, rather than to the producers.

The first real effort on the part of steel interests to win back lost markets and cultivate new ones was made in 1922 when the American Institute of Steel Construction was formed to fight for structural steel. This organization has made wonderful strides and has enlisted the active support of practically the entire fabricating industry exclusive of the mill interests.

Unfortunately the good work of this organization is being retarded by the indifferent attitude not only of the mills that sell steel to the fabricators but of some mills who roll shapes and also fabricate them. In spite of this handicap, the institute is making progress as great or possibly greater than that of the Portland Cement association at any stage of its remarkable rise. It is impossible to conjecture what might be accomplished by the American Institute of Steel Construction if it were given the support it deserves from the "hot steel" portion of the industry.

Sheet Producers Co-operate

Several years ago another group in the steel industry turned to co-operative effort. The Sheet Steel Trade Extension committee, comprising 29 manufacturers of steel sheets, was formed for the purpose of "regaining lost markets and finding new markets for sheet steel."

The formation of this merchandising body was significant, not only because it came at a time when it was sorely needed, but because it launched 16 steel producers into the new realm of co-operative market extension work. Of the 29 companies who "subscribe to, support and co-operate in the activities of the Sheet Steel Trade Extension committee," 13 buy sheet bars and roll them into sheets and 16 make their own ingots, break them down to sheet bars and roll them into sheets.

This indicates that some steelmakers who also are sheetmakers apparently recognize the importance of following their product through to the point of consumption.

So much has appeared in these columns of what actually has been accomplished by the Sheet Steel Trade Extension committee that a detailed account is not necessary at this time. It is sufficient to say that the demand for sheet steel has been stimulated and that a substantial part of the increased tonnage is freely credited to the efforts of the committee.

The results thus far obtained from the work of the American Institute of Steel Construction and the Sheet Steel Trade Extension committee are not surprising to those who are familiar with what groups in other industries have accomplished by similar methods. Evidence has been piling up for 20 years, proving beyond any doubt that under proper direction a group of manufacturers can greatly increase the demand for a saleable product by developing new uses, seeking new markets and assisting buyers to adapt it to their requirements.

Sales of face brick, common brick, tile, marble, limestone, slate, composition roofing, terra cotta, lumber of all kinds and numerous other commodities have been expanded far beyond the supposed limits of demand by this method. It seems apparent, therefore, that the sheet steelmakers and the structural steel fabricators, through the agency of their respective organizations, are on the right path.

This being true, what part will the hot steel industry play as the campaigns gain momentum? Will the largest producers ever acknowledge the fact that their interest in their steel extends beyond the doors of the steelworks and rolling mills? Once convinced that collective trade extension work is worthwhile, will they support it with enthusiasm and money, and give it the same careful attention they have given in the past to production and other internal problems?

These questions are vitally important. Some members of the "cold steel" industry are openly criticizing the "hot steel" group for its attitude toward those who buy for fabrication. Others, having waited patiently for some sign of interest on the part of the steelmakers, now are disgusted by what they assume is unwillingness of the producers to share their proper burden.

The situation recently was summed up by an important manufacturer who buys a good tonnage of steel annually and sells it in the form of a finished steel product. His remarks were substantially as follows:

"I believe thoroughly in this trade extension work. I'm willing to support the campaign liberally because I am confident the expenditure will bring results. But I do hate to feel that I am voluntarily assuming this burden while the company from whom I buy my steel refuses to do anything with the campaign. If the extension work enables me to double my business, it means I'll buy twice as much steel. Frankly I think the steel producer is shirking his well defined responsibility.

From the foregoing it is clear that the broad vision of rapidly growing demand for steel is in the minds of the "cold steel" part of the industry; at least they have taken the first steps in actually redeeming the position of steel in the competitive field.

If this vision could be supported by the assistance—moral and financial—of the steel producers, what a winning combination it would make for steel!

To Award Prizes for Arc Welding Papers

To stimulate activity and growth of electric arc welding, the Lincoln Electric Co., Cleveland, manufacturer of electric arc welding equipment, has given to the American Society of Mechanical Engineers, $17,500 to be used as cash awards for the three best papers on arc welding to be submitted in a competition. The awards will be $10,000 for first prize; $5000 for second prize and $2500 for third prize. Judging of the papers and awarding of the prizes will be under the direction of the council of the American Society of Mechanical Engineers and a special committee to be appointed. Rules of the competition are to be announced shortly.

Announce 1927 Eastern Tool Exhibition

Preliminary announcement of the seventh annual New Haven Machine Tool exhibition to be held Sept. 6-9, 1927, at Mason laboratory, Yale university, New Haven, Conn., has just been made by the exhibition committee. The exhibit is sponsored by the local section of the American Society of Mechanical Engineers, the chamber of commerce and the department of mechanical engineering, of Yale university and is operated on a nonprofit-making basis. Technical sessions where new developments and problems in the manufacture and use of machine tools are discussed are held in conjunction with the exposition and are under the direction of the machine shop practice division of the American Society of Mechanical Engineers. Harry R. Westcott, 400 Temple street, New Haven, Conn., is chairman of the exhibition committee.

Foreign Rolling Mill Installations Are of Modern Design

By R. C. D. Fell

BRITISH rolling mill practice in 1916 was far behind that of other countries, but since then heavier trades have taken place, although in the lighter mills much remains to be done as regards the scrapping of obsolete plant or reconstruction generally. In a number of cases new machinery has been installed, but the fact is frequently overlooked that by the increase of heating capacity and better handling facilities at the mills and at the finishing department, output can be increased at a comparatively small cost.

In combined blooming and slabbing mills the rolls are about 40 inches diameter and say 9 feet on the body. The speed can be varied from zero to 100 revolutions a minute and the horsepower may be anything up to 16,000. The top roll usually is balanced hydraulically while the height of the roll is adjusted by worm gear and the speed reduction operated by motor. The motor is fitted with a powerful brake to instantly stop the roll at any height required, this point being clearly marked on a dial graduated in inches etc.

The bearings or chocks for the rolls are white metal lined, but have several bronze strips cast in. The rolls are firmly held at one end from endwise movement, although adjustable in that direction, but at the other end they are free to expand, being arranged to reduce the excessive wear on the flange of the chocks.

Universal Joint Provided

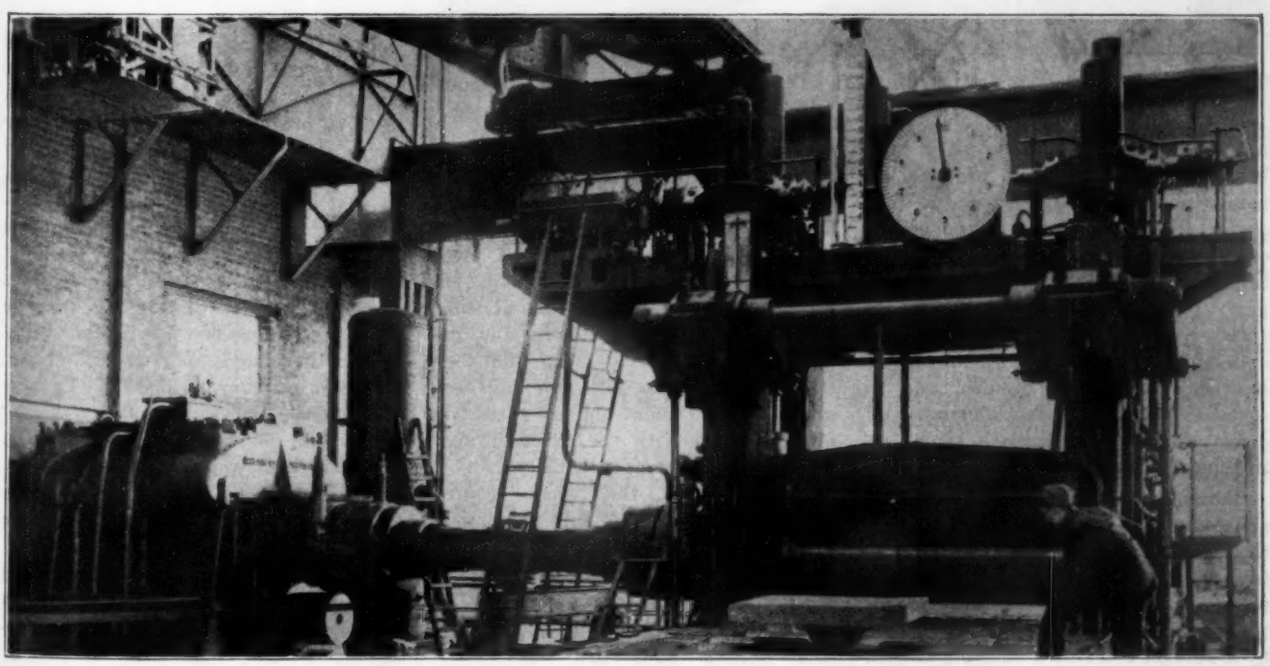
Practically no back lash is apparent in the coupling boxes, these being machined accurately to a fit. To allow for angularity, the ends of the spindles are fitted with one of several designs of universal joint. The coupling boxes can be instantly slid on and off the roll ends by hydraulic gear. The spindles and rolls are balanced by a complete system of hydraulic gears to reduce wear. For quick removal of the rolls, the bearings for the top roll are hooked to the top of the housing window and the clamp plates holding the chocks in position are moved aside, so that the rolls can be swung out by the crane.

For quickly tumbling the blooms or slabs at the rolls the electric or hydraulic manipulator with tilting fingers and sliding vice heads, which can also straighten the piece, are now well established. The vice heads are located on the ingoing and outgoing side of the mill and are intercoupled so that it is impossible for a bloom to be guided into the rolls, and foul the vice head as it leaves. Ingots up to 20 tons or blooms as small as 6 x 6 inches can be tilted by a manipulator recently built, this range of sizes being handled without any alteration to the manipulator. The mill, ingot manipulator, roller gear etc., are all operated from an overhead bridge over the ingoing main roller table.

Three distinct designs of bloom or slab shears are in use, namely, the vertical downcutting, vertical upcutting and horizontal. All can be electrically or hydraulically driven, but for the larger sizes steam-hydraulic intensifiers are a necessity. Where steam is not available a rack operated by motor-driven pinion is employed for driving the intensifier ram. Slabs up to say 18 x 6 inches thick can be cut.

Merchant mill rolls vary from 8 to 22-inch diameter. The speed of the piece during rolling being about

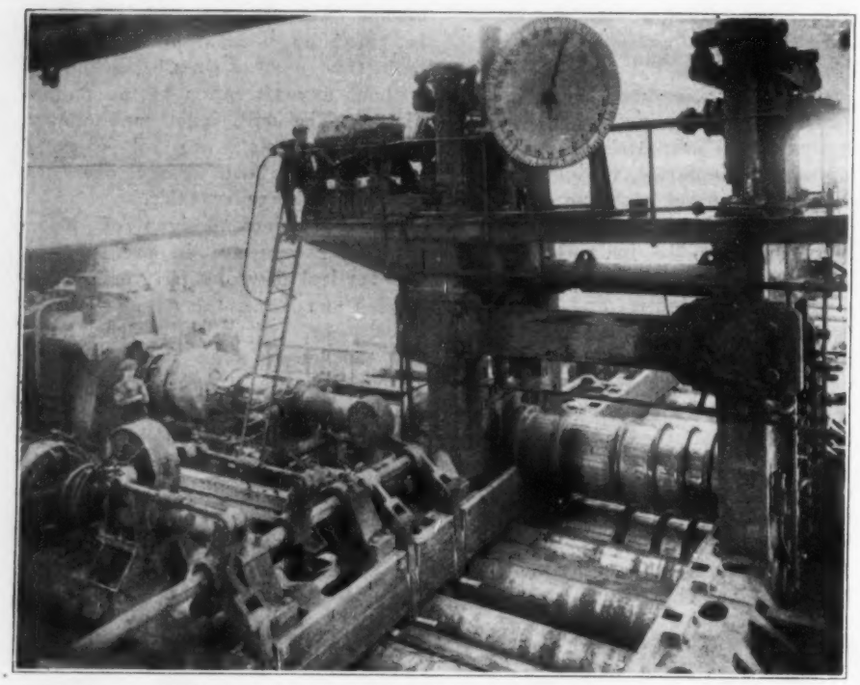
Abstract of a paper recently presented before the technical session, Association of Engineering and Shipbuilding Draughtsmen, London. The author, R. C. D. Fell, is located at 167 Duncombe street, Sheffield, England.



108-INCH, 3-HIGH PLATE MILL WITH SLAB ROTATING GEAR IN FOREGROUND. THE CENTERING GEAR IS NOT SHOWN

530 feet a minute, with a rise or fall of 15 per cent up to say 18 inch mills; beyond this size the speed is about 480 feet a minute. Where there is a train of 3-high rolls, it is common practice to place a roughing stand with rolls say 3 inches larger in diameter in front, these rolls running slower than the others, but making heavy reductions on the piece. In most cases it is advisable to install variable speed motors with a speed range of 1 to 1 1/3, as it is only by this means that full advantage can be taken of the varying qualities of steel and temperature attainable.

The motors are designed to give increased twisting effort as the speed falls. In the case of a nonreversing mill where the rotational speed is fairly high, it is sound practice to mount a flywheel direct on the mill center line, but where this speed is only moderate it is often an advantage to introduce a speed reduction-gear set and to mount two high-speed overhanging flywheels on the ends of the pinion shaft. This gear is located close to the pinions, and in certain instances the housing and gear box are in one piece thus saving floor space and weight.



40-INCH BLOOMING MILL. BALANCE GEAR IS ARRANGED FOR THE REMOVAL OF THE ROLLS THROUGH THE BACK OF THE MILL

Construction of these mills is fairly simple. In the case of 3-high stands the center roll is fixed and the bottom roll is raised by a similar screw to the one at the top, this being rotated through gearing which is turned by a ratchet lever at a suitable height. Only on the cogging stand of the larger reversing mills is electric screwdown gear fitted. The chocks or bearings are retained in position by slotted finger clamps, which can be slid aside when changing the rolls.

On the continent a continuous roughing mill of high capacity frequently is placed in front of the ordinary mill train which is arranged as an open mill, this latter ensuring a greater elasticity of the rolling program. As the length of the billet, which can be rolled largely is determined by the length of finished bar the cooling bank can accommodate, the hot bars, as they leave the finishing stand, are cut while in motion by a flying shear. Many types of flying shears are in use and their application could be extended to ordinary merchant mills. The billets used, however, should not be of too large cross-section.

In the mills referred to the piece after leaving the roughing mill enters an ordinary 3-high train of rolls, and is guided by repeaters and deflectors from pass to pass, and then it is led into an adjacent mill operated at a much higher speed, in order to deal with the extended bar. With this layout it generally is possible to cover the whole rolling program by changing only the finishing rolls or possibly the set next to these also.

As the center roll on a 3-high stand carries half of the pass for the top and bottom roll, the number of passes obtainable is limited. By arranging two distinct pairs of rolls in the one housing on the well-known double 2-high system, as many passes can be obtained in a 4-foot roll as in a 6-foot 3-high roll stand. So that when a wide variety of product is required the double 2-high mill has considerable advantages. For rolling strip the mill train is split into two groups, one ahead of the other, with coilers beyond.

Mills Arranged in Tandem

In rolling cold strip there are several methods possible but generally only four stands of rolls, placed in tandem are used. In several new plants there are five stands. The first stand operates at 40 feet a minute and the last at about 150 feet a minute. But in one instance these speeds are nearly doubled. At another plant a 3-high construction of rolls is employed, the center roll being only half the size of the top and bottom roll giving all the advantages of a small roll combined with stiffness.

During the earlier stages while the strip is relatively stout it is rolled on the edges in a set of vertical and horizontal rolls combined in the one turkshead. After leaving these mills the strip is annealed and then is passed through a finishing stand which imposes various degrees of temper on the steel, depending upon the amount of reduction taking place here. Beyond this point there are coilers which impart a permanent set in the material as it is reeled, so that it does not require to be bound with wire. The bobbins are collapsible so that the bundle can be removed easily.

The construction of the housings recently has undergone modification. As it is difficult to get fine adjustment on ordinary housing screws, they have fitted wedges, the screws for adjusting these having a gage marker, so that a definite setting can be obtained. As rigidity is of paramount importance the housings are made of cast steel, and special attention is given to the prevention of endwise float of the rolls, this point being a fruitful source of "snakey" strip. As there is considerable heat generated during the rolling, the rolls are hollow and are water-cooled internally, and this also applies to the bearing or chocks. The rolls are of heat-treated special chrome steel, and are ground to a burnished surface.

As the strip must be maintained at a fairly definite sag between the different housings the motors driving each stand separately are under automatic control as regards speed,

so as to ensure that the strip is not broken or does not foul the machinery.

Structural mill rolls vary from 28 to 37 inches diameter and the mills are usually of the reversing type. In making a start on a new plant three stands occasionally are installed, one to cog, the second to rough and the other to finish, it being intended to eventually install a new cogging mill in front and make the temporary cogger into a first rougher, and so on.

With this object in view the soaking pits are 300 or 400 feet away and the ingots are delivered by a buggy to the roller approach table. At the cogging stand there is an ordinary ingot manipulator; at the roughing stand it is necessary to employ a manipulator to hold up rails or sections; at the finishing stand a structural framework pusher gear is provided. Quick roll changing is of importance on these mills. It is usual to have a drive at each end, so that the finishing mill can operate at about 1300 feet a minute while the other mills are working about half this speed on another piece.

The cooling banks for a large mill will have an area in total of say 20,000 square feet. In a number of cases several circular saws are arranged to cut simultaneously. On the continent they have for years rolled out to a finish from the ingot heat, but in Great Britain and the United States they now favor a wash heat before the structural mill is reached.

Multiple Shear Used

In sheet mill practice the sheet bars, 1½ x 10 inches, are cut to required lengths under a shear, designed to handle six 1½ x 8-inch bars at a time. After the cut the bars are pushed automatically on a table which is depressed by an amount equal to the layer of cut bars put on to it. The crane lifts a pile of cut bars off and takes these to be heated in a combined continuous bar furnace and sheet reheating furnace.

The hot mill rolls range from 28 to 30-inch diameter and rotate at 230 feet a minute. Mills which roll plates for circular saws usually are equipped with an air-operated lifting rig for returning the plates over the rolls. In the case of mills engaged on heavy sheets or light plates the top roll for the roughing stand has to be driven, but there is a slipping device to protect the pinions from being stripped owing to the rolls not being of equal diameter. In these cases the top roll is operated by electric screw-down, and this roll is balanced, but all other rolls are ordinary jump rolls.

As these mills rotate at about 30 revolutions per minute, flywheels as heavy as 165 tons have been installed, these being either driven by rope or gearing from a motor. By adopting a gear reduction, high-speed flywheels and combination sheet and pair furnaces considerable floor space can be saved.

The Italians recently have introduced a patented system of bringing the hot sheet bars underground on roller gear, and automatically elevating them into the rolls. It is said 60 per cent greater output can be obtained by this method. At the Italian plant mentioned the rolls are adjusted by wedge gear, the screws operating these being graduated to give definite readings, as they claim to be able to get finer results by the use of these instead of the usual housing screws.

Numerous designs of plate mills exist, but one that has firmly established itself as a record breaker is the 3-high construction, where the center roll which rises and falls is equal in diameter to two thirds the diameter of the top and bottom rolls. As the center roll is only small it can with a given power cause greater metal displacement, and yet it is rendered stiff by being backed up by the larger roll.

The slabs after reheating approach the rolls in the direction in which they originally were rolled and make two or three passes through the rolls. They then are automatically rotated through a right angle, the length of the slab being now but slightly less than the width of plate required. The plate rolling proper now commences, and after each pass the piece is centered by two hydraulically-operated arms and then makes its return pass.

In several continental plants the plate is rolled on the bottom and center roll only for the earlier passes, the motor rotating slowly. Later the mill is operated in the usual manner, and at a high speed. In one works in Great Britain 4300 tons of finished plates is rolled per week. An alternative drive arrangement is to design the mill pinions so as to function as a speed reduction of 4½ to 1, and to mount say a 50-ton flywheel in its own bearings, thus requiring a much smaller motor. The flywheel is fitted with a brake which is also capable of lifting the wheel so that the bearings can be attended to.

The deflecting roller tables are balanced by a hydropneumatic system but the actual movement is by electric drive. The center roll is hydraulically operated, but this gear, and the other parts affected, can be swung clear when balancing the rolls out in the crane, the rolls are ground to a slight camber.

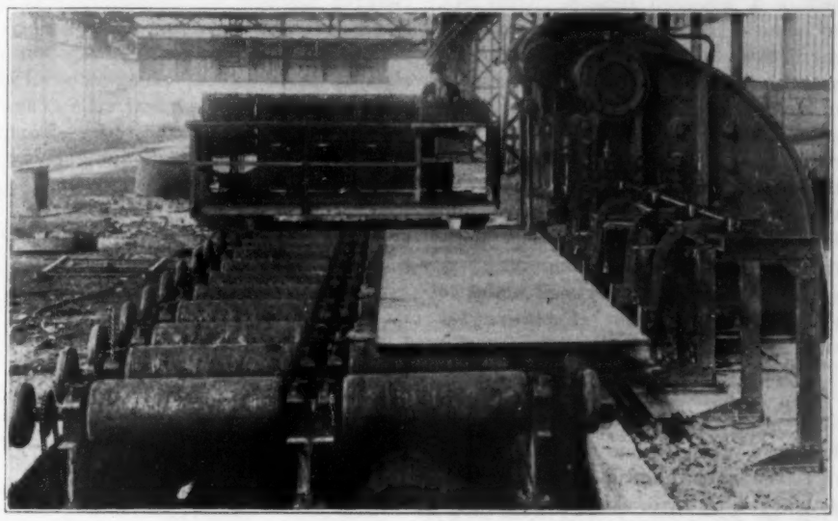


PLATE HANDLING MACHINE OF THE ENNIS TYPE LOCATED AT THE SIDE TRIMMING SHEARS IN THE FINISHING DEPARTMENT

As an electric shear has to complete a revolution before making another cut, when dividing or slitting plates, the flywheels have in certain cases been discarded in the design, two larger reversing motors being installed. By the use of a magnetic type table, which consists of a length of rollers, gear mounted on four wheels, the plate can be held by magnets in any position, or can be rotated at will. In addition the shears are under the control of one workman.

Universal plate mills may be 2-high or 3-high. They are equipped with vertical rolls for rolling the plates on the edges. The vertical rolls and

their holders can be removed and the mill used as an ordinary plate mill, rolling to much greater widths. With the vertical rolls in position the narrowest plate rolled on say a 32-inch mill is 11 inches wide.

The slabs approach to the mill on a buggy running along the side of the mill roller gear, and as one plate disappears through the rolls the slab is hydraulically pushed on to the mill table. As these plates when extended to say 100 feet are light per foot run, roller gear is not carried beyond that point, but only plain floor plates. Plates say 170 feet long are rolled. As the plates tend to be "snakey" in the plan view they are clamped against a rigid straight edge while en route to the crosscut shears.

With billet and sheet bar mills it is customary to use a 3-ton ingot and to cog this down to an 8 x 8-inch or 6½ x 6½-inch section. It is not economical to roll to smaller sizes than this latter. When starting a new plant a 6-stand mill is installed to produce say 1¾ x 1¾-inch billets from 4½ x 4½-inch blooms, leaving room to add another six stands, between the other mills mentioned and the blooming mill, when they would then cog down to 8 x 8-inch only, thus relieving the blooming mill. A gap has to be left between the two groups for the outlet of blooms for sale as such.

No Reheating Required

In numerous cases a sheet bar mill has been offset to one side on a plant like the last named, to which the roughed bars are skidded and from the ingot heat to sheet bars, say 40 pounds per foot downwards. At an American plant the ingot is rolled down to round bars which are run out to hot saws and cut to length for forging into axles, there being three steam hammers on either side of the roller runout for this purpose.

As the blooms are run out from the cogging mill they are cut to lengths under heavy shears, and can be skidded to one side and sold as blooms, or go ahead until they reach the roughing rolls, this group having edging rolls for the sheet bar slabs. At this point the rollers are skewed, so that the bloom hugs one side of the roller track, and upon reversing the rollers the bloom immediately travels across to the other side, and falls into a V-groove, in the surface of the rollers which tilt the bloom on edge, so as to enter the diamond pass in the rolls.

To keep the square shape, the bloom is twisted by guides through a right angle from housing to housing. Before the bloom or slab enters the finishing group of rolls the cold end is cut off by a flying shear. After leaving the finishing groups of rolls sheet bars are automatically piled and transferred to the cooling banks or the billets are skidded over the banks direct, and piled in pockets at the far end. Where the billet mill also rolls sheet bars there are two sets of housings, so that when changing over, the whole housing with guides and rolls in order can be placed in position. The billets and sheet bars are cut into 30-foot lengths, by flying shears. With this layout the ingot is rolled out to billets or sheet bars direct from the ingot heat.

Cobble Shear Provided

With hot strip and skelp mills the billets, 30 feet long, are heated in a continuous furnace and are then discharged through an emergency shear which is operated only in case of accident. The roughing group consists of seven stands of 12-inch rolls and one stand of edging rolls. On leaving the last stand, the front cold end is cut off by a flying shear before entering the second group, the first rolls now entered being vertical edging rolls. The finishing group includes six stands.

As the strip or skelp leaves the last pair of rolls there is an arrangement for vibrating the piece on its edge and laying it out in snake-like coils to cool. Frequently 3000 feet is confined within a space of about 75 feet. It is now wound on reels. The strip while cooling is traveling upon a conveyor. Skelp, on the other hand, is cut to lengths of about 22 feet by rotary flying shears. As a piece is cut it is thrust forward on to the tail of the piece preceding it, and goes along to piling rolls. When a pile has gathered, the batch is passed over the bank and taken to stock. Hot strip now can be rolled on special mills to 21 inches wide. It then is passed to the slitters in the cold rolling department.

On similar lines to the plant referred to under merchant mills, the continuous furnace supplies billets to a continuous mill, the rolls of which contain passes to cover the whole rolling program, so far as the roughing is concerned. Upon leaving this group the bar enters a set of mills located in a staggered position, rendering possible a more compact arrangement. Light bars and rods are guided from stand to stand by repeaters and as they leave the last pass these are coiled and discharged to a conveyor. In the case of stiffer sections, these are handled by roller tables. The tables are placed on the slant, in plain view, and the rollers are skewed in relation to their lineshaft, so that a bar upon leaving the rolls hugs one side of the table; upon reversing the rollers the bar immediately moves over to the opposite side and into line with a switch, which guides the piece into its proper pass.

With this layout it is only necessary to change rolls in the later passes, to deal with a variety of product, and the tables are arranged for free movement when looping on rod rolling.

Foundrymen Name Chicago for 1927

Selection of Chicago for the 1927 convention of the American Foundrymen's association, June 6-10, has been announced by the board of directors of the association following a meeting at Chicago, Dec. 7. As decided at the recent Detroit convention, the 1927 meeting will be held without the exhibition of equipment, the next exhibition being scheduled for the 1928 convention in the spring of 1928. Action on the selection of the 1928 meeting place was deferred.

S. Wells Utley, Detroit Steel Casting Co., Detroit, president elect, and S. T. Johnston, S. Obermayer Co., Chicago, vice president elect, took office at last week's meeting of the board. C. E. Hoyt was re-elected executive secretary of the association and manager of exhibits and Robert E. Kennedy was re-elected technical secretary.

The executive committee of the board of directors for 1927, which was elected at the Chicago meeting is as follows: S. Wells Utley, president; S. T. Johnston, vice president; C. E. Hoyt, executive secretary; L. W. Wilson, Federal Malleable Co., Milwaukee; W. J. Nugent, Nugent Steel Castings Co., Chicago; A. B. Root Jr., Hunt-Spiller Mfg. Corp., Boston; L. W. Olson, Ohio Brass Co., Mansfield, O. Alfred E. Howell, retiring member of the board of directors, was the guest of honor at a luncheon tendered him by the officers and board after the meeting. He was presented an engraved inkstand and illuminated resolution by the board.

A review of the year's progress in heat treatment was the subject of discussion at the meeting of the Rhode Island chapter of the American Society for Steel Treating held at Providence, R. I. Dec. 1. Dr. R. S. Williams professor of metallography, Massachusetts Institute of Technology, was the chief speaker.

Improved Use of Materials, Chief Means of Eliminating Waste in Industry

By John A. Willard

THE conduct of business in this country during the past 30 years has been undergoing a marked change. During the earlier part of the period efforts of management were directed mainly to improvement of machine effectiveness. This period was followed by another era for the development of manpower effectiveness, as represented by the work in which Frederick W. Taylor was a pioneer. Immediately following there came a period of management effectiveness, in which the hidden wastes of management were particularly sought out and remedies proposed. At present, distribution is considered the major problem of business men, and there is just beginning a period of increasing the effectiveness of invested or borrowed capital.

C. J. Stark, president, Penton Publishing Co., Cleveland, has said: "While volume has been large, margins of profit have been the smallest relatively ever known." In the face of present manufacturing conditions, reduction of waste is essential to place profit margin where it belongs. Industry today is faced by the following conditions:

Higher wages due to decreased immigration.
Steadily increasing cost of materials.
Smaller size orders, resulting from hand-to-mouth buying.
Decreasing margins between costs and selling prices.
More intensive domestic competition.
High taxation.
Growing foreign competition.
More rigid standards of quality.
Cyclical and seasonal variations in business.

For many of these basic conditions of business there is no direct remedy. It must be recognized that these are the conditions under which the modern business man must conduct his operations and try to come out at the end of the year with a net profit. The profits of tomorrow are coming out of the wastes of today.

* * *

IN THE past 30 years management in general, and industrial engineers in particular, have been neglectful of progress in the reduction and control of waste in industrial materials. The industrial engineer is particularly blameworthy for this condition because industry looks to him for progress in management efficiency. He must pioneer in the field of industrial management or yield the floor to that energetic group of plant executives who must have an answer to their pressing problem of making both ends meet, with a percentage to spare.

This problem was first recognized in a practical way and steps taken to combat the conditions by the appointment in 1921 of the Hoover committee on elimination of waste in industry. The report of the committee was of far-reaching importance, but it has taken too long for this work to gain the real impetus which it deserves.

Business managers today are seeing the futility of stressing labor and neglecting the utilization of material. In the woodworking industry in Grand Rapids, Mich., materials for the period from 1920 to date have averaged 33 cents of each $1 of sales, whereas labor has averaged only 15 to 25 cents.

In the corset trade materials will average over the whole range of styles 60 per cent of the sales dollar, whereas labor averages only 9 per cent of the sales dollar. In hosiery, of the total manufacturing cost, materials for infants' socks cost 60 to 70 per cent of the total cost of manufacture, whereas labor averages about 16 per cent of the manufacturing cost. With Japanese silk at $6.55 a pound in the raw silk market and rayon at $1.50 to $2 a pound, it is readily seen that reduction in the waste of material is an important factor in the production of hosiery.

Unless the labor efficiency in a plant is inordinately low, the possibilities of savings from improved utilization of materials can greatly exceed the possibilities of gain through increased labor efficiency.

* * *

Magnitude of Losses Due to Waste

MR. HOOVER'S committee on the elimination of waste in industry developed some startling figures with regard to the magnitude of wastes. The waste as calculated by reliable authorities for mining and manufacturing reaches a stupendous total.

Mr. Hudson of the division of simplified practice of the department of commerce, estimates on minimum considerations that the gross total of waste in this country equals 50 per cent of the total value of the products manufactured. Since this value reaches $60,000,000,000 per annum, waste in industry may be taken at $30,000,000,000.

Stuart Chase in his recent book entitled "The Tragedy of Waste," places his estimate of minimum waste likewise at 50 per cent.

Harrington Emerson in an address before the Society of Industrial Engineers March 24, 1925, evaluated waste at $100,000,000 per day, which checks with the previously stated total of $30,000,000,000 per annum.

Estimating Your Losses

TO MAKE a rough check on the waste in your plant, add the number of firm members, the number of salaried employes and the total number of wage earners. Multiply this figure by $1000 *and you will arrive roughly at the waste in your plant. This figure may be substantiated by reference to a recent statement of the department of commerce, giving the total number of workers engaged in mining and manufacturing at* 12,000,000. *If this figure is divided into the* $12,000,000,000 *of waste, stated in this article, we arrive at the round figure of* $1000 *per worker.*

From a paper presented during management week program at Ohio State university, Columbus, O.

Taking the present value of products arising from mining and manufacturing at a level of $66,600,000,000 for the current year, and based on the estimates of the Hoover committee that 50 per cent of this figure represents the gross waste in industry in this country, they make the further assumption that one-half of this amount, or $16,650,000,000, is avoidable waste. Also, the report of the Hoover committee states that 75 per cent of the waste in industry is due to management and labor ineffectiveness, the remaining 25 per cent being due to outside causes over which neither management nor labor has control.

Seventy-five per cent of the figure for avoidable waste leaves us with the astounding total of $12,487,500,000 of preventable waste due to the inefficiency of management and labor in this country. Taking this at the round figure of $12,000,000,000, waste will amount to $1,000,000,000 per month, or $40,000,000 per day.

Since the labor in our prime industries goes into the production of this material and is entered in the books of the ultimate convertor of this material as the cost of material, we can consider this stupendous total represents the total waste of material occurring in this country.

* * *

AS A FURTHER index of the waste burden which the people of this country are supporting, half the coke industry still operates on the beehive process rather than using the modern by-product recovery process. On this basis alone the coke industry is undergoing losses of at least 50 per cent.

In the clothing trade and in the mining industry, workers are busy only 31 per cent of the total working days in the year; in the building trades only 37 per cent per annum. The average steam plant is only 12½ per cent as efficient as the modern central stations. The excess capacity of blast furnaces is figured at 20 to 50 per cent of that actually required for current sales. Further efficiencies of utilization may be cited as follows:

Coal, from mine to ultimate utilization, 12½ per cent.
Water power, utilization to the potential 16 per cent.
Wood, from the tree to completed furniture, 25 per cent.
Oil, from pool to product, 25 per cent.
Natural gas, utilization to potential 50 per cent.

One quarter of the area of the United States or 80,000,000 acres is waste soil on which trees might be grown. It is estimated that inefficiency in the use of packaging material costs the country $50,000,000 per annum. This country has a tremendous volume of wood waste.

The responsibility for waste can be divided as follows, quoting again from the Hoover waste report:

Waste for which labor is responsible, 17.1 per cent.
Waste for which management is responsible, 67.3 per cent.
Total for which management and labor are responsible, 84.4 per cent.
Waste due to external causes, 15.6 per cent.
Total, 100.0 per cent.

The ratio of the responsibility of management and labor is roughly 2½ to 1. The ratio of waste in the best plants, to the waste in the average plant ranges from 1 to 1½ to 1 to 4½. Each plant owner should ask "What is my ratio of actual waste to calculated waste, to that of the best of my competitors?"

Provide an Incentive

CARE and attention on the part of the worker can only be maintained by providing an adequate incentive in the pay envelope. It is desirable to set proper limits for the incentive or bonus, keeping in mind that industrial engineers have determined that the average industrial worker will not properly respond under a bonus much less than 30 per cent of his current base wage. As a practical basis for determining the limits of bonus reward for accomplishment of the desired standard of reduction in waste, it is feasible to pay up to 50 per cent of the total saving to the worker if necessary to provide him with an adequate incentive.

Production standards of the past must certainly be maintained but reduction in waste is the main issue. It has been found that increased productions of at least 10 per cent are readily feasible in connection with a greatly reduced percentage of waste.

* * *

Possible Remedies

COMPARATIVELY little has actually been accomplished to make headway against existing conditions, although research laboratories throughout the country are making every effort to find methods for utilizing waste materials. It is reliably reported that Henry Ford in the operation of his woodworking unit utilizes almost every scrap in some way or other in the production of the Ford car. Nevertheless, the surface has only been scratched in coping with this tremendous problem confronting American industry.

About ten years ago members of the organization with whom the speaker is associated made a study of the operations of a group of woodworkers in an association of woodworking plants. Lumber is a variable product. No two trees ever grew alike. An oak tree grown on the plains of Indiana will be totally different in the texture of the wood produced from a tree grown in low, swampy land, even though from the same seedlings. During this contact with the woodworking trade, the waste in the cutting of lumber appeared in practically every plant as a serious problem.

By a strange coincidence a solution for the problem was developed from a study carried out in a totally different industry, the manufacture of underwear. Underwear is cut from knitted tubular fabric which is subject to a large number of defects such as needle holes, bad oil spots, and the like, and is almost as variable as lumber cut from a tree.

In the study of this problem, it was found that this tubular fabric could be so manipulated by the cutter that the holes could be folded out to the edge of the piled fabric and a marked reduction made in the percentage of waste and percentage of seconds produced. It was realized that the cutting of lumber was an entirely similar problem.

Improved utilization of the material must come from the constant watchfulness of the worker to make certain that the knitted fabric or the lumber is cut up in such a way as to secure maximum utilization of the raw material.

* * *

FOR the computation of the results in the improved utilization of materials, two bases are open; one, per cent of yield; two, per cent of waste. It has seemed most logical to base the figures on per cent of waste to keep urgently before the worker the fact that he is reducing waste. For this purpose the per cent of waste is computed as the ratio of the actual waste divided by the gross amount of material put into process.

This method has been installed in several score of woodworking plants and in several underwear factories, so that by now the procedure has been standardized practically as follows:

1—List all parts in the product.
2—Figure standard net content constants for these parts and finally group them in terms of assemblies, if

output is figured on that basis.

3—Make operational analyses of current and standard waste percentages and of the productive output of each individual operation based on time studies.

4—Set up a standard group of workers.

5—Start current weekly determinations of per cent waste and production.

6—Determine past average per cent of waste and production for the past year if possible.

7—State combined waste and production tests.

8—Decide on bonus limit and bonus curve.

9—Prepare report, presenting plan and calculation of savings, including detail of calculations and forms for records.

10—Keep graphic chart of results.

The results from the installation of such an incentive method for the improved utilization of industrial materials have been gratifying. In one plant manufacturing underwear with a total production of about 11,000 dozen garments per week, the waste was reduced from a level of 22 to 28 per cent to a level of 14 to 18 per cent, with resulting savings of $93,500 a year. In a smaller plant where the waste ran from 18 to 20 per cent on different style goods a reduction to 10 to 12 per cent waste was obtained with proportionate reduction in savings.

In the woodworking trade the following results have been obtained, monthly basis:

	Lumber cut (million feet)	Lumber per cent	Saved (million feet)	Production increases per cent
Wringing machines	500	23	or 115	35
Office equipment	500	24	120	54
Battery boxes	375	14	52	90
Kitchen cabinets	2500	3	75	12
Checkers, dominoes	375	11	41	35
Saw handles	150	10	15	100
Commercial fixtures	250	14	35	800
Commercial fixtures	1125	7	79	350
Oak flooring	750	10	75	28
Auto bodies	1750	9	157	97
Averages	827	11	75	....

This table taken from the results of a few of the applications of this method is indicative of the tremendous opportunities that are possible in the improved utilization of industrial materials. The method itself seems admirably adapted to the reduction of waste on materials of a nonhomogeneous nature such as lumber, knitted fabric, leather, etc.

In the succeeding years it seems certain that developments of this or a similar method will be made to improve the utilization of the vast quantity of material being consumed annually in American industries.

British Columbia Mineral Year Bests 1925

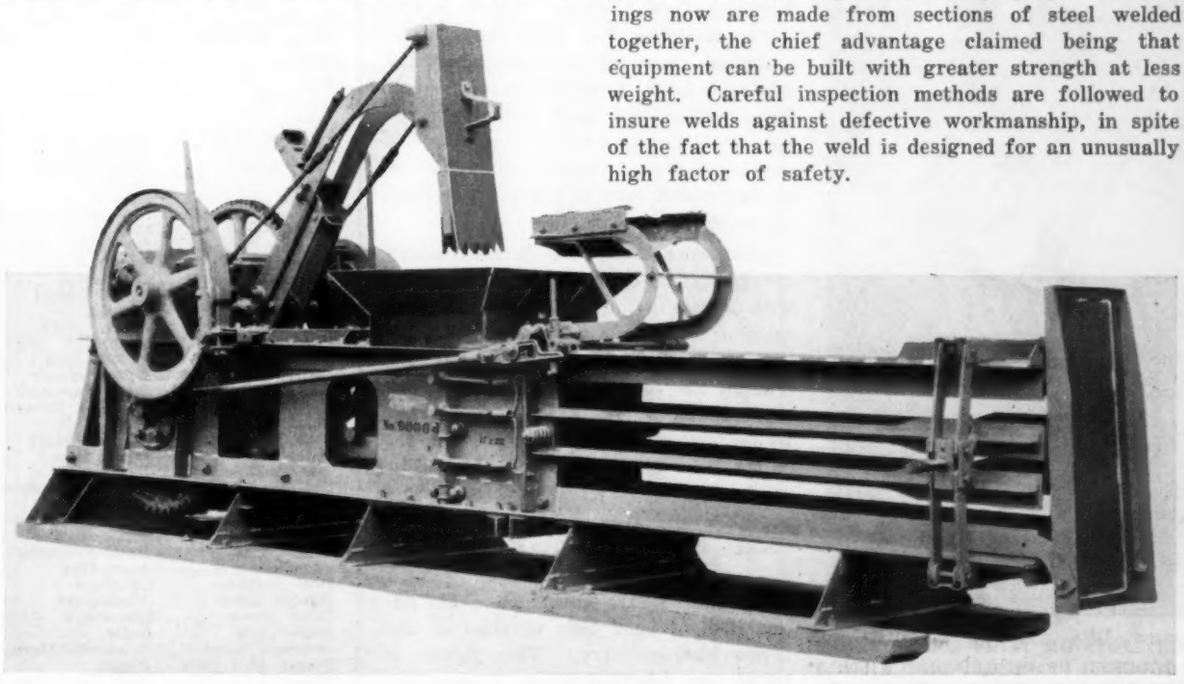
A summary of the mining industry in British Columbia for the first ten months of 1926 together with a Canadian estimate of the total production for the whole of 1926 indicates that the value of the mineral production in that province for this year will approximate $67,718,400, compared with $61,492,242 in 1925, states a report to the department of commerce from Assistant Trade Commissioner J. B. Richards, Toronto, Ont. The increase has been made in the face of average metal prices lower than in 1925.

Timken Roller Bearing Co., Canton, O., has obtained the order for the bearings for 127 railroad cars for the Chicago, Milwaukee & St. Paul railroad.

Uses Arc Welded Construction on Baling Presses

BALING presses are subjected to heavy stresses, consequently their construction must be extremely sturdy. A new press introduced recently by the Ohio Cultivator Co., Bellevue, O., for baling waste paper, scrap from textile mills, and similar uses, features an electrically arc welded construction. With the welded design the joints have been made so much stronger than the strength members that it would be necessary to wreck the whole machine before the joints would loosen up or fail. To make various parts of the machine replaceable, some bolted joints are used so that the press can be taken apart.

The Ohio Cultivator Co. employs electric arc welding equipment manufactured by the Lincoln Electric Co., Cleveland, and has made wide use of it in the manufacture of agricultural machinery and baling presses. Numerous parts formerly gray iron castings now are made from sections of steel welded together, the chief advantage claimed being that equipment can be built with greater strength at less weight. Careful inspection methods are followed to insure welds against defective workmanship, in spite of the fact that the weld is designed for an unusually high factor of safety.



Large Uses of Steel In Small Ways

NO MORE typical demonstration of the use of high-grade steel to further the progress of civilization can be found than the modern typewriter. Except for the development of high tempered spring steel, a typewriter, if it could be built at all, would most certainly be a clumsy, slow-operating mechanism. The delicacy of action in a typewriter which makes possible a speed of more than 200 words a minute is entirely dependent upon the quality of the steel type bar, links and springs.

The production of typewriters has increased tremendously during the past ten years until today the industry requires the services of from 18,000 to 20,000 workers. Even this figure does not portray the growth of the industry because much automatic and labor saving machinery has been developed. At one plant in Connecticut production runs close to 500 complete machines a day. This plant alone uses between five and six tons of steel each day. The manufacture of typewriters is closely associated with the manufacture of calculating machines and many other modifications of the typewriter principle, so that it is difficult to estimate accurately the total production of typewriters. One manufacturer, basing his estimate on the government figure of $50,000,000 a year as the value of typewriter production, figures that 600,000 typewriters were made in this country in 1925.

ROUGH SPOTS ON TYPEWRITER FRAMES ARE TOUCHED UP ON GRINDING WHEELS BEFORE BEING ENAMELED AND SENT TO THE ASSEMBLING ROOM

A standard typewriter will weigh from 30 to 40 pounds. This is made up of cast iron, rubber composition, glass and steel in various grades and forms. The construction of one of the standard typewriters calls for the assembling of 1600 different parts. The great majority of these parts are of steel. Stampings, forgings, screw machine products, bars sheets, wire and many other forms of steel are used for the various parts.

The heart of any typewriter is the assembly known as the universal type bar links and springs. There is one such assembly for each key. The principal parts of this assembly are made of finely tempered spring steel. Many other steel parts call for careful heat treatment so that a well developed heat treating department is an important part of every typewriter manufacturing plant.

Connecticut has the largest share of typewriter business of the country with a production of close to 400,000 machines a year. The recent popularity of portable typewriters has increased the total number, but has decreased the weight of steel per typewriter. A standard sized machine requires from 25 to 35 pounds of steel in various forms in its manufacture. The portable machines bring the average weight of steel per typewriter down to from 10 to 15 pounds. Taking the larger figure this means an annual use of 6000 tons of steel in the typewriter industry. This figure is based on production of typewriters exclusive of typewriter parts, and it is probable that this tonnage would be more than doubled if all products made by typewriter manufacturers were included.

In typewriter production the value added by labor forms a large part of the value. In one plant where all processes have been carefully tabulated and routed a graphic record is kept of more than 4000 operations required to produce a completed typewriter. In this plant the steel stock room is equipped with modern scales and material handling apparatus. From the stock room the different materials are distributed through the many departments, and the efficiency of keeping a close check of the hundreds of parts as they commence to take shape is the result of years of endeavor. This work is accomplished by assembling parts in groups. These different groups then have their own departments.

Typewriters

THIS is the seventy-ninth of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the great American tonnage.

The first article on "corsets" appeared Nov. 22, 1923. Other articles appearing fortnightly since are:

Pins	*Pens*
Cotton Ties	*Steel Wool*
Toys	*License Plates*
Spinning Rings	*Hypodermic Needles*
Card Clothing	*Shoe Steel*
Tie Plates	*Crushed Steel*
Tacks	*Skates*
Knives and Forks	*Needles*
Surgical Instruments	*Phonograph Needles*
Fence Posts	*Golf Clubs*
Eyeglass Cases	*Mechanical Pencils*
Fishing Tackle	*Burial Caskets*
Dental Drills	*Telephones*
Pocket Knives	*Radio Towers*
Rat Guards	*Brushes*
Snap Fasteners	*Electric Bells*
Paper Clips	*Bookbinder Wire*
Steel Vests	*Sucker Rods*
Electrical Conduit	*Watch Hands*
Radiator Furniture	*Steel Furniture*
Notebooks	*Highway Markers*
Metal Beds	*Camp Cots*
Bolts and Nuts	*Flexible Shaft*
Metal Lath	*Wood Pipe*
Tin Cans	*Buttons*
Umbrellas	*Sheet Metal Screws*
Steel Barrels	*Rivets*
Washers	*Billboards*
Overall Trimmings	*Razor Blades*
Bird Cages	*Metal Strapping*
Turnbuckles	*Lace Tips*
Steel Derricks	*Oil Cups*
Handle Cores	*Ventilators*
Camp Stoves	*Toy Autos*
Bottle Caps	*Safes*
Artificial Limbs	*Scissors—Shears*
Finger Nail Files	*Pistols*
Pencil Lead Boxes	*Milk, Ice Cream Cans*
Small Steel Cases	

Accidents Steadily Decreasing

Iron and Steel Plants Stressing Safety Work Reduce Frequency Rate 86 Per Cent, Others Only 15 Per Cent, in Span of 15 Years—Severity Index Also Shows General Improvement

CONTINUED progress in reducing the number and severity of accidents in the iron and steel industry is shown by the latest survey and compilations made by the bureau of labor statistics.

In the group of plants where energetic safety work has been carried on the reduction in accident frequency since 1913 has been approximately 86 per cent, while in the case of those plants where the work has not been stressed the reduction has been only about 15 per cent. The board's current report extends its record through the year 1925, and the results are shown in the accompanying tables.

"The majority of the individual departments show reduced rates," the board says in summarizing its findings. A notable exception is the foundries. This department has kept almost identical rates from year to year in spite of the fact that important concerns, when considered separately, show the usual decline.

"It will be noted that in most of the departments the severity rate is much more irregular than the frequency rate. This is necessarily the case. Frequency is based on items which have a common value and so influence the rate in the same degree. A death has the same effect on the frequency rate as disability for one day. In severity, however, a death influences the rate 6000 times as much as a one-day disability.

Accident Reduction in Plants Stressing Safety Work

(FREQUENCY RATES PER 1,000,000 HOURS EXPOSURE)

Yead ending—	Fabrication	Sheets	Wire	Tubes	Miscellaneous steel products Group A	Group B	Total
December, 1913	100.3	61.6	59.3	27.2	70.9	41.3	60.3
June, 1914	75.5	53.7	51.0	19.1	62.8	33.3	51.6
December, 1914	59.0	47.2	46.2	12.5	50.7	27.6	43.5
June, 1915	51.2	41.8	44.3	8.7	42.7	23.3	38.0
December, 1915	53.5	37.3	52.4	10.8	51.9	23.0	41.5
June, 1916	54.5	36.5	52.2	12.2	62.7	27.0	44.7
December, 1916	52.1	34.0	48.2	12.4	67.6	28.2	44.4
June, 1917	53.3	32.3	42.6	11.5	62.2	24.5	40.5
December, 1917	51.3	33.9	32.5	10.2	51.3	20.5	34.5
June, 1918	45.7	31.3	24.6	9.9	45.2	24.3	31.1
December, 1918	38.2	25.9	18.8	9.1	42.0	31.4	28.8
June, 1919	33.6	24.4	15.4	8.7	40.7	28.4	27.1
December, 1919	32.8	25.8	12.5	9.1	39.7	23.0	26.1
June, 1920	35.3	25.0	12.2	9.2	38.0	21.2	25.0
December, 1920	35.3	22.7	12.0	8.9	35.3	18.6	22.9
June, 1921	32.4	20.2	9.3	7.3	27.6	15.5	18.7
December, 1921	28.4	17.5	7.5	6.1	15.8	12.1	13.2
June, 1922	29.7	16.8	7.9	6.4	13.1	10.9	12.3
December, 1922	38.8	16.9	7.9	7.1	14.5	10.8	13.0
June, 1923	33.2	19.0	7.9	7.7	14.3	10.3	13.3
December, 1923	32.6	17.2	7.9	7.0	13.9	9.8	12.7
June, 1924	34.7	12.9	7.4	6.0	13.5	9.1	11.6
December, 1924	33.4	10.3	6.2	5.1	11.8	7.9	10.2
June, 1925	28.8	10.6	4.4	4.4	10.3	5.2	8.7
December, 1925	27.4	11.4	4.2	4.0	9.8	3.7	8.2

Accidents Rates in Iron and Steel Industry

(FREQUENCY RATES PER 1,000,000 HOURS' EXPOSURE

Period	All departments	Blast furnaces	Bessemer converters	Open hearth	Foundries	Heavy rolling mills	Plate mills	Sheet mills
1907 to 1911	69.2	76.1	101.5	84.2	60.1	61.0	69.4	44.1
1908 to 1912	65.1	67.7	79.5	79.5	61.5	57.0	60.8	47.9
1909 to 1913	62.1	62.4	92.3	78.6	65.1	51.7	55.9	49.1
1910 to 1914	59.2	62.3	89.8	75.0	63.6	46.1	49.9	51.1
1911 to 1915	53.3	50.3	65.0	67.6	59.3	39.4	44.7	48.1
1912 to 1916	51.3	47.8	76.1	64.8	57.8	37.3	41.5	47.4
1913 to 1917	48.2	41.4	68.8	58.4	60.4	32.1	36.6	41.3
1914 to 1918	43.6	40.5	60.7	53.5	57.0	31.1	39.8	35.8
1915 to 1919	41.6	39.0	57.7	50.5	61.0	32.4	39.2	32.7
1916 to 1920	41.1	38.0	53.1	50.2	61.0	31.4	38.4	33.7
1917 to 1921	39.5	36.3	47.0	44.8	63.1	29.9	37.6	33.4
1918 to 1922	36.5	34.0	39.9	41.3	60.4	27.6	36.7	35.2
1919 to 1923	34.9	32.9	30.5	33.0	61.7	23.8	31.4	37.2
1920 to 1924	33.6	30.7	24.9	32.9	62.7	21.2	29.4	35.1
1921 to 1925	31.3	29.0	17.0	29.9	63.1	18.1	26.8	33.2
(SEVERITY RATES PER 1,000 HOUR'S EXPOSURE)								
1907 to 1911	5.0	10.6	7.6	7.5	2.7	4.4	5.1	3.1
1908 to 1912	4.3	8.8	7.4	6.6	3.1	4.2	4.1	2.8
1909 to 1913	4.4	8.3	6.7	6.8	3.5	4.0	3.8	3.0
1910 to 1914	4.1	7.0	6.4	6.6	3.6	3.6	3.9	2.6
1911 to 1915	3.6	6.2	5.3	5.8	3.3	3.4	3.1	2.2
1912 to 1916	3.7	5.8	6.1	5.5	3.1	3.5	2.8	2.3
1913 to 1917	3.7	5.6	7.1	5.1	3.3	3.6	2.6	2.1
1914 to 1918	3.5	5.4	7.3	5.8	3.2	3.4	2.6	1.8
1915 to 1919	3.6	5.8	6.9	6.5	3.4	3.9	2.5	1.5
1916 to 1920	3.5	5.7	6.3	6.3	3.2	3.5	2.6	1.8
1917 to 1921	3.4	5.7	5.4	5.8	3.2	3.3	2.5	1.7
1918 to 1922	3.1	5.5	4.2	5.3	2.7	2.9	2.5	1.8
1919 to 1923	3.0	5.0	3.2	4.2	2.7	2.4	2.4	1.9
1920 to 1924	2.8	4.5	2.6	4.2	2.8	2.3	2.4	2.1
1921 to 1925	2.7	4.6	3.2	4.0	3.1	2.6	2.6	1.9

"Death is fortunately of relatively rare occurrence but when it does occur has a pronounced influence on the severity rate. This may be illustrated by the plate mill department. These mills had from 1910 to 1924 an almost uniform decline in accident frequency from period to period. In no year did more than five deaths occur and in 1924 there were but three. Then in 1925 there were six deaths. The frequency continued to decline but severity went up to a point nearly as high as that shown for the period 1910 to 1914.

"Wire drawing is notable for the high severity of permanent disability. In a majority of departments the severity rate for death is in excess of permanent and temporary disability taken together. In wire drawing the higher severity rate is found in permanent disability. This is doubtless due to the hazard of becoming entangled in the wire, which may easily result in the loss of a hand or other severe injury.

"Internal transportation continues to be a serious problem. Accident frequency in the yards has changed for the better very materially and accident severity has become less, but not very much, and still remains high.

"A small department with a high

rate is that of docks and ore yards. It might be supposed that the high rates were exceptional and related to the small exposure if it were not for the fact of constancy of the rates from period to period.

"Since 1912 a continuous record has been maintained of a group of structural-iron workers numbering about 1000. While there has been a marked improvement, the hazards are evidently extreme, since in every period for which it has been possible to compute rates this department has a higher rate than any other unless it be logging. It has not been possible to study the rate for logging on a large enough scale and for a long time to warrant any very positive conclusions.

"The structural steel workers had in the period of 1912 to 1914 a frequency rate of 121.7 and a severity rate of 31.4. Inspection of the other departments will show that this is the highest rate found anywhere. In 1925 the rates were: Frequency, 71.2; severity, 22.4. This is a decline of 41 per cent in frequency and 29 per cent in severity. This is a large decrease, but not equal to those in other hazardous departments.

Says Unscientific Rate Structure Harms

In an address by E. C. Heidrich Jr., Peoria, Ill., former president of the Illinois Manufacturers' association, before the Nebraska Manufacturers' association, Dec. 9, at Omaha, Nebr., the charge was made that railroads have not given sufficient attention to the problems of scientific rate making, and that their method of fixing freight rates has caused the relocation of many industrial plants.

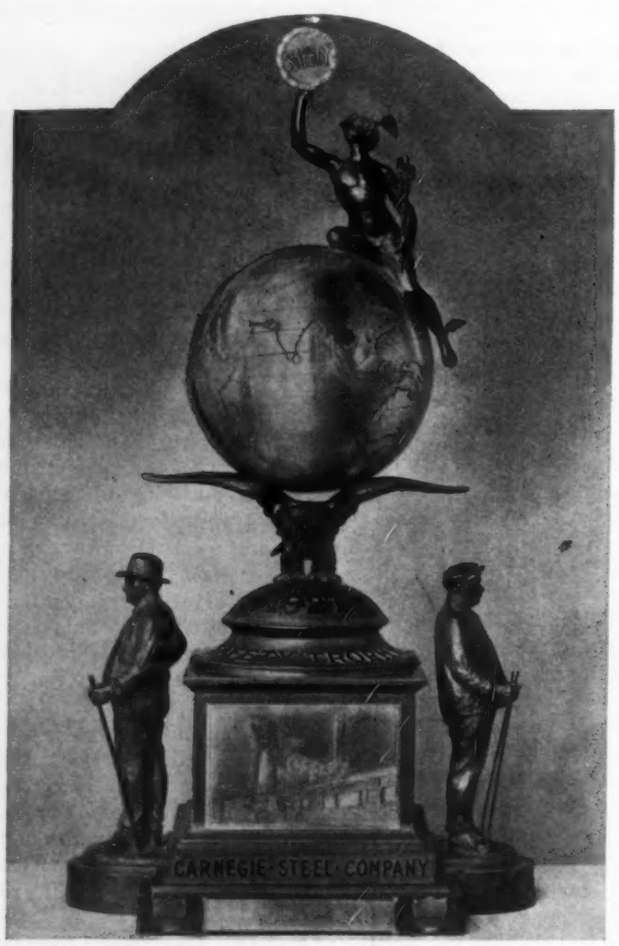
Mr. Heidrich declared that when freight rebates were withdrawn on passage of the Elkins law in 1903 wholesale removal of favorable rates also was made from one whole section of the country to another. Thus, it was said, rates from St. Louis and Chicago to the South, which gave these cities a commanding position in the business of that territory were advanced and lower rates made available for eastern Atlantic coast points.

Declaring that the day of large centralized plants, such as steel at Pittsburgh and flour at Minnesota, now is departed, the speaker stated that the principle result of these higher rates has been the rearrangement of profitable territory and curtailment of the amount of territory profitable for any one plant.

"Big business with many plants and its ability to place new plants at strategic points," he said, "is profiting by the upset of territory, and smaller business is feeling the pinch."

Mr. Heidrich urged that American railroads give more consideration to the economic problems of freight rate-making, and suggested the organization and building up of departments tarined particularly for handling such economic problems. He also suggested that the public combine with the interstate commerce commission in the creation of a new department designed to develop fundamental principles which might be used to govern the entire freight rate fabric.

Emanuel J. Janitzky, chief metallurgist, South Works, Illnois Steel Co., South Chicago, Ill., was the principal speaker at the regular monthly meeting of the Chicago chapter of American Society for Steel Treating, Dec. 9 at the City club. Mr. Janitzky presented a highly interesting illustrated lecture on "Temperature Distribution in Steel Bodies in Cooling."



Compete for Sixth Safety Trophy

THE Carnegie Steel Co.'s safety trophy which is to be competed for by its 11 plants during 1927 has been completed. The year 1927 will be the sixth year in which safety has been on a competitive basis in Carnegie mills. The five trophies for the preceding years were of bronze and were of a more allegorical character. The 1927 trophy is of bronze and silver and is 42 inches high. It was designed and produced by one of the country's foremost silversmiths. The silver globe is richly etched portraying various modes of transportation of steel and its component parts. It rests upon the outstretched wings of a bronze eagle.

This trophy is held from month to month by the plant which makes the greatest percentage of reduction in lost time accidents over its preceding five years' record for the month. At the end of the year the plant which makes the greatest percentage of reduction for the entire year over its record for the preceding five years, receives the trophy "for keeps."

Editorials

Group Merchandising Is Effective

ANNOUNCEMENT of the recent opening of the new home in Chicago of the Portland Cement association again focuses attention on the effective work of this organization covering a period of 24 years. Through co-operative effort it has developed an extensive market for cement and has made concrete a byword throughout the country.

Practically all merchandising activities in the steel industry, at least until a few years ago, were carried on individually. Perhaps it is safe to say that the market development work of the steel industry has cost fully as much as that of the concrete industry, but it has been much less effective.

The reason for this is simple. The campaign for concrete has been carried on consistently and continuously since 1902. Every expenditure and every new activity has been directed toward a well-defined purpose. Wasted effort has been reduced to a minimum. On the other hand, the work of the steel companies, each working separately, has been sporadic and in many cases poorly conceived and improperly executed. The waste due to absence of a definite policy, lack of continuing effort and to ignorance of merchandising methods is astonishing, but is not nearly as great as the loss due to duplication of activities caused by a hundred companies each struggling along independently.

The co-operative effort of the cement manufacturers has entrenched concrete in the public mind as an indispensable material of construction. Since the individual effort of the steel producers has failed to create a similar consciousness for steel, the logical procedure is for the steel industry to adopt co-operative methods. Fortunately the way has been paved by the Sheet Steel Trade Extension committee and the American Institute of Steel Construction, but as yet the steel producers as a group have not thrown their support to these agencies, nor have they displayed any interest in co-operative merchandising in any other direction. It would appear that the "hot steel" group is holding back the entire industry in its desire to extend markets for steel.

Steel is getting old enough to have its life span recorded. The bureau of railway economics assigns an average life of 30 years to steel cars. The profitable life of a steel frame skyscraper at Chicago has been found to be 35 years, with the physical life probably twice that figure.

Zinc Shipments Set New High

SHIPMENTS of zinc to domestic buyers broke all records in November. The feat was accomplished after ten months of uniformly high business; still more remarkable is it considering that shipments in the previous three months attained a steady flow of over 50,000 tons for the first time. It was clearly not a case of consumers allowing stocks to run unusually low and then suddenly calling for replenishment. The sale of 53,319 short tons to domestic buyers was accompanied by only 3171 tons for export, and yet in only a few previous months in the history of the trade were total shipments for a month so large. Domestic shipments in 11 months were 537,710 tons, or 12 tons larger than in all 1925, a record breaking year in domestic business.

In the face of this splendid business, prices have sagged to about 7.00c, East St. Louis, for prime western, but high grade has remained fairly stable. However, the sag occurred mostly at the end of last month and early this month, and as the size of shipments and cut in stocks were surprising to the trade, apparently no one realized his neighbor was doing good business also. It was not a market in which metal was forced. As past years go, the price is not bad, but it has been much under this time a year ago. Meanwhile, export business has fallen as world output has increased to the greatest level this year. Domestic consumption of zinc has increased in many lines, but in die castings it is said to have been especially good. The big lines of galvanizing and brass also have been running high. A firmer market is expected from realization of the facts, though big November shipments may in part have cut into December business.

Welding Effects Railroad Economies

THAT American railroads have operated more economically during the last two or three years is common knowledge, earnings of the carriers being witness of this. Many factors have contributed to bring the country's transportation systems back to their favorable position among public utility corporations. One is the appication of more modern engineering practices in

the construction and maintenance of rolling stock.

Repair work provides a major portion of railroad shop activity and therein lies the greatest opportunity for effecting savings. That the railroads actually are saving great sums of money in this way was most forcibly brought out in two papers presented at the recent Buffalo convention of the American Welding society. One author, representing a large western railroad, pointed out how fusion welding, including gas, electric and thermit processes, is working enormous savings. A few examples prove most enlightening.

Six drive wheel centers, costing $1500 new, were welded for $147.31 including overhead. With a scrap value of $90, the total saving was $1262.69. Six locomotive cylinders with a replacement value of $5300 were welded at a cost of $740.13, and with a scrap value of $540 resulted in a saving of $4019.87. Six engine tender bolsters costing $630 new were repaired by welding for $124.92. Considering a scrap value of $67.30, the saving derived was $437.78. In discussing these savings the speaker intimated that even yet the full advantage of welding has not been attained and that much remains to be done before the full economy and value of welding processes can be realized and the work extended to the fullest extent possible.

Wall Street, sometimes supersensitive to changing conditions, might have been expected to feel bearish concerning the recent arbitration decision raising eastern trainmen $15,000,000 annually. Instead, it saw a harbinger of extended railroad labor peace and railroad stocks advanced!

Safety Work Brings Results

DOES it pay? This question often is asked regarding safety efforts of a continuous or intermittent character in the iron and steel industry. The report that Henry Ford recently discharged his entire safety department as one of the first steps in cutting down overhead tended further to increase doubt concerning the efficacy of such departments.

Some companies in the iron and steel industry, notably the Steel corporation, conduct their safety work in a dignified, studious, persistent manner, in charge of experts who are devoting their lives to the cause. Others supplement their instructions with "drives" in which they seek to dramatize hazards and their results, in bizarre fashion, such as lynching or burying in a coffin "Old Man Carelessness," and stationing a skeleton or a "dummy" representing a corpse beside a machine, or at a hazardous place. Such efforts have raised the question whether they do not tend to make timid workers instead of safe workers.

As a general proposition, however, the merit of safety work must be judged by its composite results; it is a contest, with a majority of companies active in the game. Methods may differ but they are working to the same end, and how effectively may be judged from the bureau of labor's survey of the industry. This shows that plants where safety work is stressed have reduced their accident frequencies 86 per cent in the last 13 years, against a reduction of only 15 per cent in other establishments. Can there be any doubt about the general results, of great economic importance, accruing from safety work?

What Our Readers Are Thinking

Business Reflects Europe's Attitude

IN VIEW of the frequent current discussions many of them unfortunately tinged with partisan wrangling, it seems appropriate to identify certain important evidences of actual recovery in European trade and industry, particularly in relation to American business.

Europe is still by all odds our best customer. During the fiscal year 1925-26 Europe purchased American goods to the amount of over $2,334,000,000, or 49 per cent of our total foreign sales. The value of Europe's purchases from us in 1912-13 was $1,479,000,000 which, after appropriate increase has been made for change in price levels would correspond in 1925-26 to $2,064,000,000. The actual exports for 1925-26 thus show a substantial increase.

One phase of our trade with Europe which has been much discussed of late is the alleged unfavorable effect of so-called "anti-American" feeling. Expressions of this kind on the part of some political men, some poets, and some newspapers have been widely quoted. They do not represent the real attitude of Europe toward the United States.

The great mass of people realize the enormous and generous services performed by the United States both during and after the war. Moreover Europe realizes that the prosperity of the United States furnishes an economic reservoir for strengthening broken European institutions and that it has enabled us to increase our purchases from Europe at the rate of nearly $100,000,000 annually over the last four years, thus bringing daily returns and daily services to Europe.

At any rate the effects of unfavorable sentiment upon every-day business are susceptible of exact analysis. A recent first-hand survey of the opinions of competent expert observers in some 25 important foreign commercial centers revealed only one or two isolated instances of trade losses that could be attributed to this supposedly devasting hostility toward all things American. Once more, it would seem that the primary considerations in the mind of the shrewd European consumer are maximum return in quality and service at minimum cost with nationalistic patrioteering very much of a secondary influence.—DR. JULIUS KLEIN, *director, United States bureau of foreign and domestic commerce, in address to National Credit Men's association, New York, Nov.* 23.

The Reader's Page

Vol. LXXIX, No. 25 IRON TRADE REVIEW Dec. 16, 1926

Cement Industry Affords an Object Lesson

THAT there is a twilight zone in the steel market is apparent from a reading of the leading article in this issue. By twilight zone is meant a fringe of indefinite boundary wherein there is a vast expanse of opportunity lying beyond the line of necessity. The writer states that if all sales influences were removed suddenly, steel would continue to be used on a large scale, but sales would not be nearly so large as under the stimulus of publicity, and they would be still larger through concerted co-operative action. That is the merchandising lesson in the story of the cement industry, which has been expanding by reason of the fact 87 competing manufacturers co-operate through one agency in finding and developing new sales possibilities. They have been doing so for 24 years, while of 140 steel producers in the United States and Canada only 16 are engaged in similar work.

Concrete's Success Helps Steel. Page. 1545.

Contents

SPECIAL ARTICLES

What Has Been Done for Cement Can Be Done for Steel ..... *By E. L. Shaner* 1545

Foreign Rolling Mill Installations Are of Modern Design ..... *By R. C. D. Fell* 1549

Improved Use of Materials Chief Means of Eliminating Waste....*By John A. Willard* 1553

Uses Arc Welded Construction in Baling Presses 1555

Large Uses of Steel in Small Ways—Typewriters 1556

Accidents Steadily Decreasing 1557

Compete for Sixth Safety Trophy 1558

Editorials 1559

BUSINESS TREND

Better Equipment Buying Probable ..... *By John W. Hill* 1562

Car Awards 1562
Unfilled Orders 1563
Steel Ingots 1563
Freight Traffic 1564
Building Construction 1564
Foundry Equipment..1565
Bank Clearings 1565

MARKET REPORTS

Review of Markets 1566

Iron and Steel Prices 1567, 1568, 1572, 1581, 1606

Pig Iron 1569
Coke 1570
Ferroalloys 1570
Semifinished 1571
Plates 1571
Iron and Steel Scrap.1573
Sheets 1573
Tin Plate 1574
Pipe 1574
Iron Ore 1575
Bars 1575
Structural Shapes 1576
Reinforcing Bars 1577
Railroad Equipment..1578
Cold Finished Steel ..1579
Nuts, Bolts, Rivets ..1579
Wire and Nails 1579
Nonferrous Metals 1580
Coke By-Products 1580
Warehouse 1581
Pacific Coast Markets 1582
Foreign Markets 1595
Machinery Markets ..1599
Crane Inquiry and Awards 1599

GENERAL NEWS

A.S.M.E. Attains New Heights 1585

Power Show Sets New Record 1587

Review Management Problems 1590

Industrial Men in the Day's News ..... *Capt. William E. McKay* 1592

Men of Industry 1593
Here and There in Industry 1597
Obituary 1598
Business Changes 1600
Construction and Enterprise 1601
Trade Publications ..1604

IRON TRADE REVIEW is published every Thursday by the Penton Publishing Co., Cleveland, O. Member, Audit Bureau of Circulation; Associated Business Papers, Inc.; and National Publishers Association.

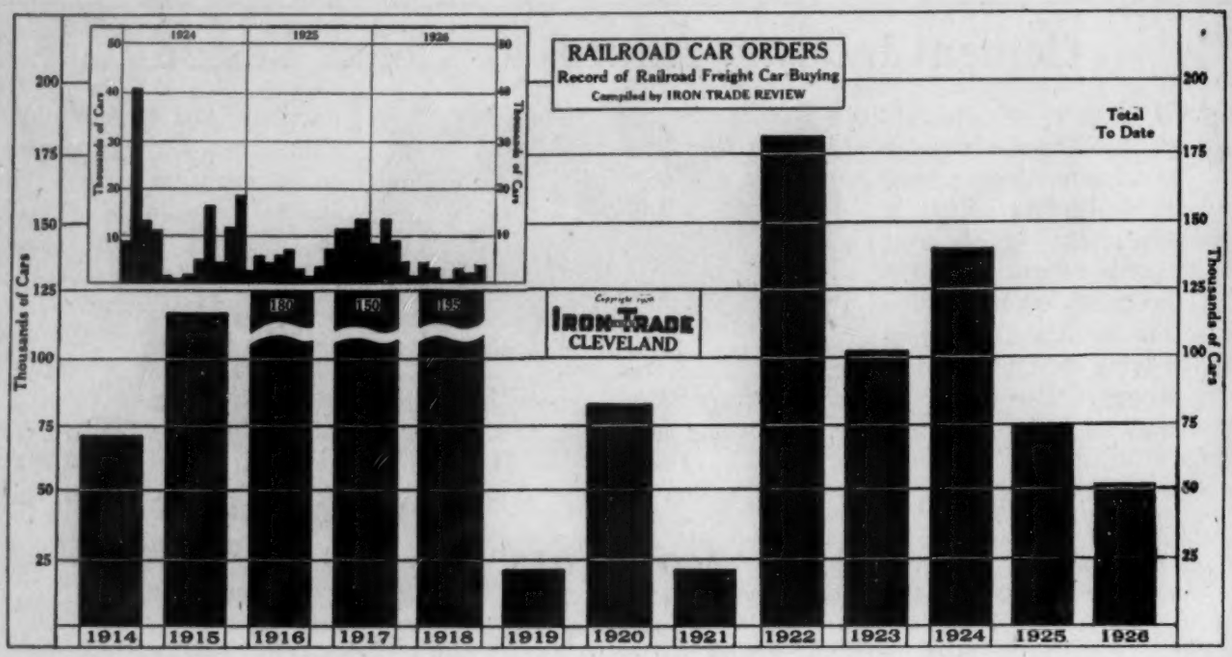
Charles J. Stark .....Editor
Earl L. Shaner .....Managing Editor
John D. Pease .....Advertising Director
Francis F. Light.....Circulation Manager

Branch offices 1037 Old South Bldg., Boston; 1147 People's Gas Bldg., Chicago; 209 Edwards Bldg., Cincinnati; 2203-2206 No. 220 Broadway, New York; 2148-49 Oliver Bldg., Pittsburgh; 24 California street, San Francisco; 1653 Pennsylvania avenue, Washington. Foreign offices: Prince's Chambers, Birmingham, Eng.; 2-3 Caxton House, Westminster S. W. 1, London; 9 Rue de Londres, Paris, France; Kurfurstendamm 136, Berlin-Halsensee, Berlin, Germany.

Cable address: *PENTON*, Cleveland; *IROTRAPEN*, London.

Terms: Subscription in United States, Cuba and Mexico, $6 per year; in Canada, $8.50 per year and in Great Britain and other countries, £2:0:0 per year. *Entered at the Postoffice at Cleveland as Second Class Matter.* *Copyright 1926 by the Penton Publishing Co.*

The Business Trend



Better Equipment Buying Probable

By JOHN W. HILL, Financial Editor

ENCOURAGING indications have begun to appear of increased buying by the railroads. Early in December inquiries for more than 20,000 new freight cars were in the hands of equipment makers. This was the largest volume of inquiries in months. Probably it may be regarded as the beginning of a substantial buying movement of equipment.

DURING November total freight car awards amounted to 3925. This was the best month since last June when orders for 4285 cars were placed. During the first 11 months, 51,585 cars were ordered compared with 77,110 cars for all of 1925 and with 144,425 cars for all of the year 1924.

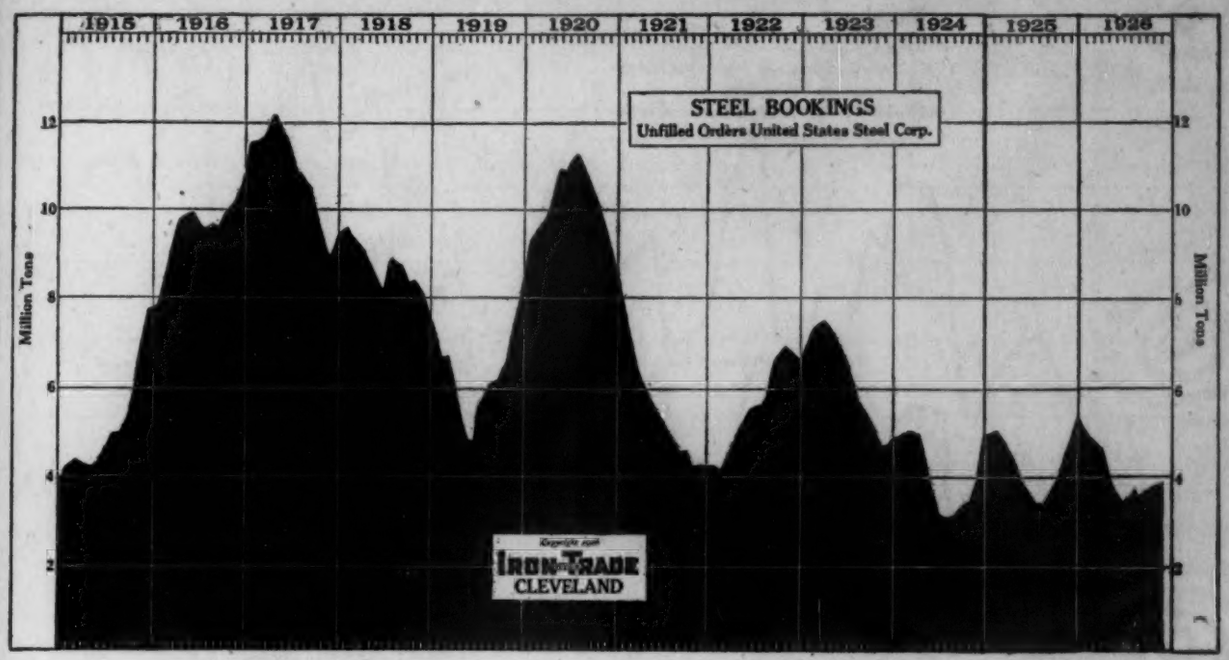
BUYING activities by the railroads will be one of the determining factors in the prosperity of iron and steel industry in 1927. Railroad purchases are depended upon to offset any decline in the consumption of steel from other sources. Since consumption by the railroads ranges in different years from 23 per cent to 30 per cent of finished steel output, their importance in the steel market is impressively apparent.

DURING the past year purchases of equipment have been small. It is certain that roads are in a better financial position than they have been in many years. Moreover the unprecedented traffic of recent years has put a terrific strain upon existing equipment. All this implies the need for new equipment.

NORMAL requirements for the roads are difficult to ascertain. By some authorities it is estimated that replacement needs amount to from 125,000 to 150,000 cars annually. This takes no account of the growth of the country. Since 1920 the average purchases of cars have fallen far below this computed normal.

TWO factors have enabled the railroads to get along with buying less equipment. One of these has been the great achievement of efficiency. Another is the increasing use of steel cars. In 1924 of the 2,348,725 freight cars, 75 per cent were of all steel or steel underframe construction, compared with only 59 per cent in 1916. The life of all-steel cars is about 30 years compared with the life of 20 years for wooden cars. This undoubtedly is contributing to some extent in reducing the replacement needs of the railroads.

The Business Trend

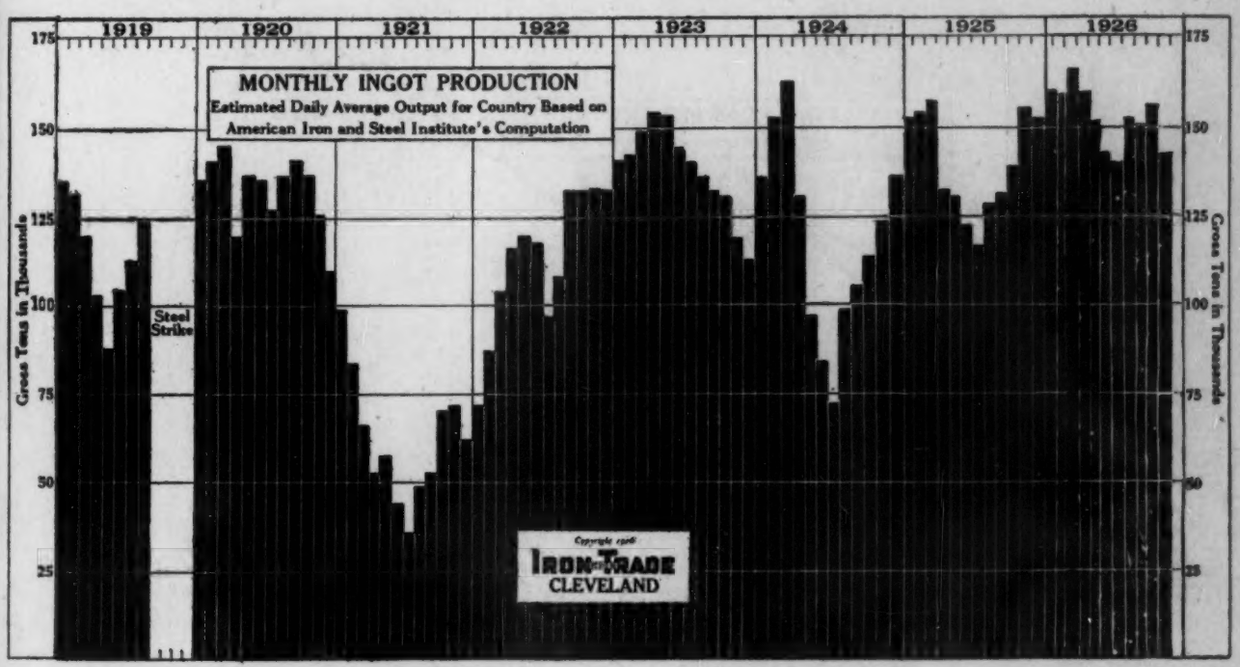


Unfilled Orders

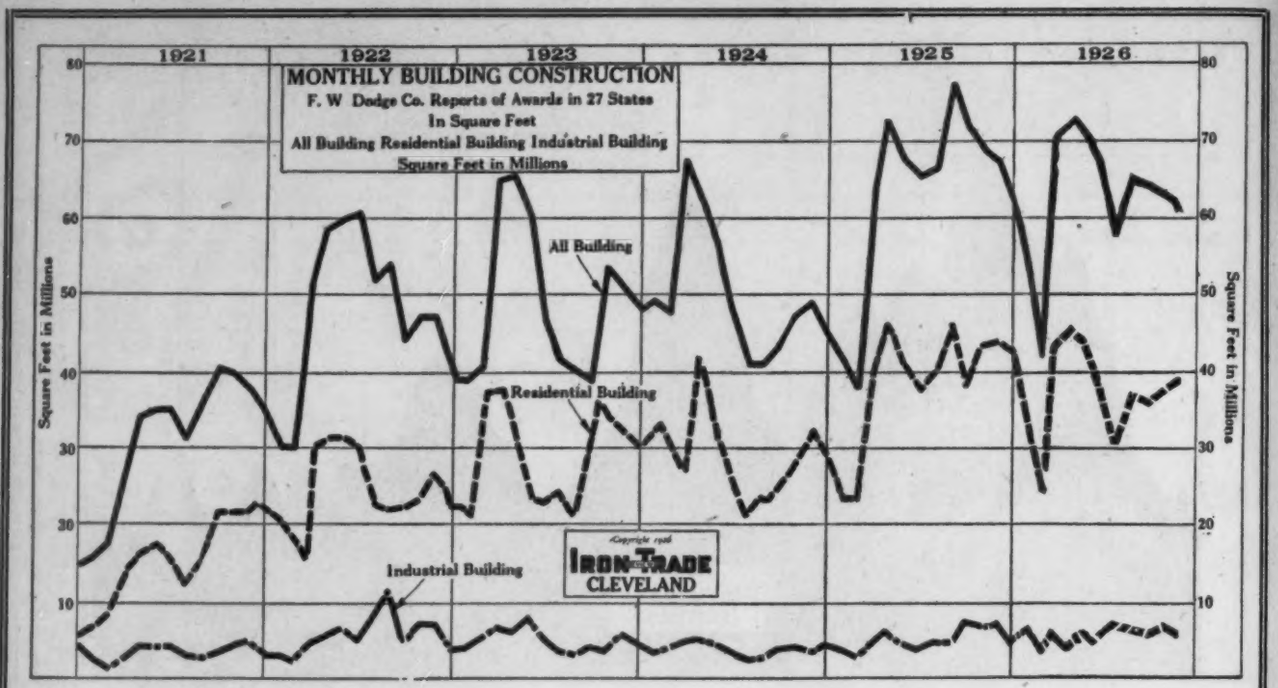
UNFILLED orders of the United States Steel Corp. as of Nov. 30, showed an increase of 123,786 tons compared with the total reported at the close of the previous month. Aggregate volume of orders on books on Nov. 30 was 3,807,447 tons. The gain during November was the largest of any in three months. The total was the highest for any time since April. It is smaller, however, than the aggregate of 4,581,780 tons one year ago which figure represented an increase of 472,000 tons over October, 1925.

Steel Ingot Output

NOVEMBER brought a sharp decline in the daily rate of output for steel ingots. The average for the month was 143,158 tons compared with 157,406 tons in October, a decrease of 9 per cent. In November, 1925, the daily average rate of output was 156,116 tons. That figure represented an increase of 8 per cent over the preceding October. The November rate was the smallest for any month since July. For 11 months the output of ingots has been 43,661,517 tons.



The Business Trend

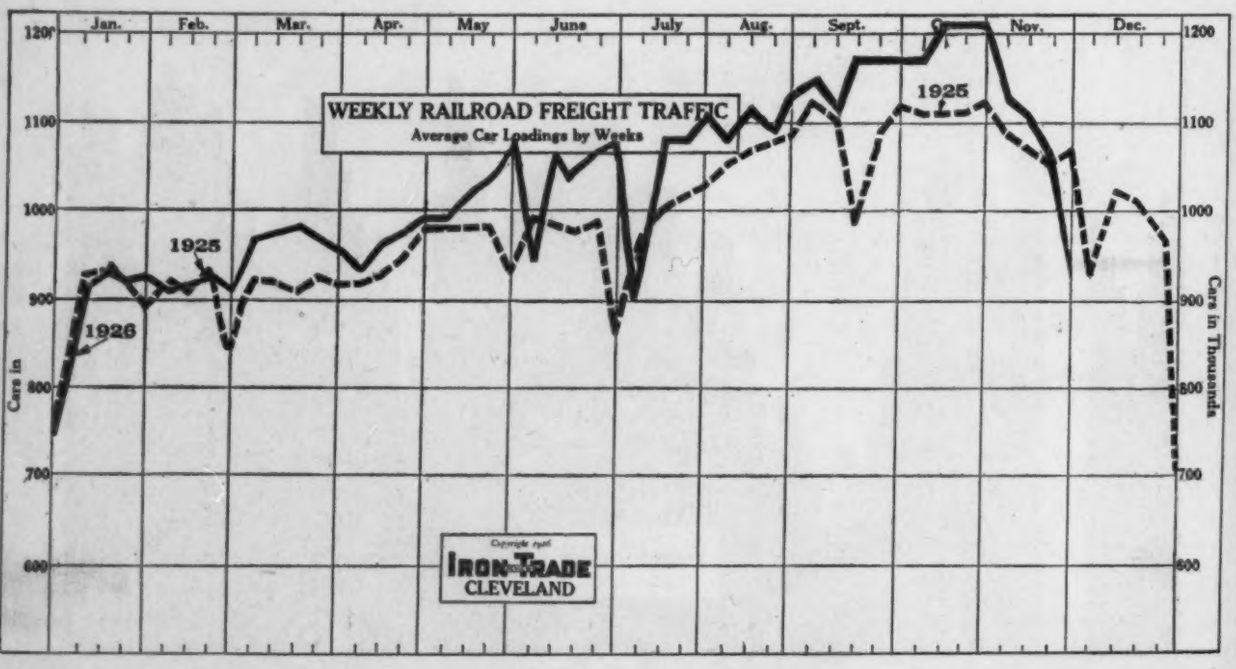


Building Construction

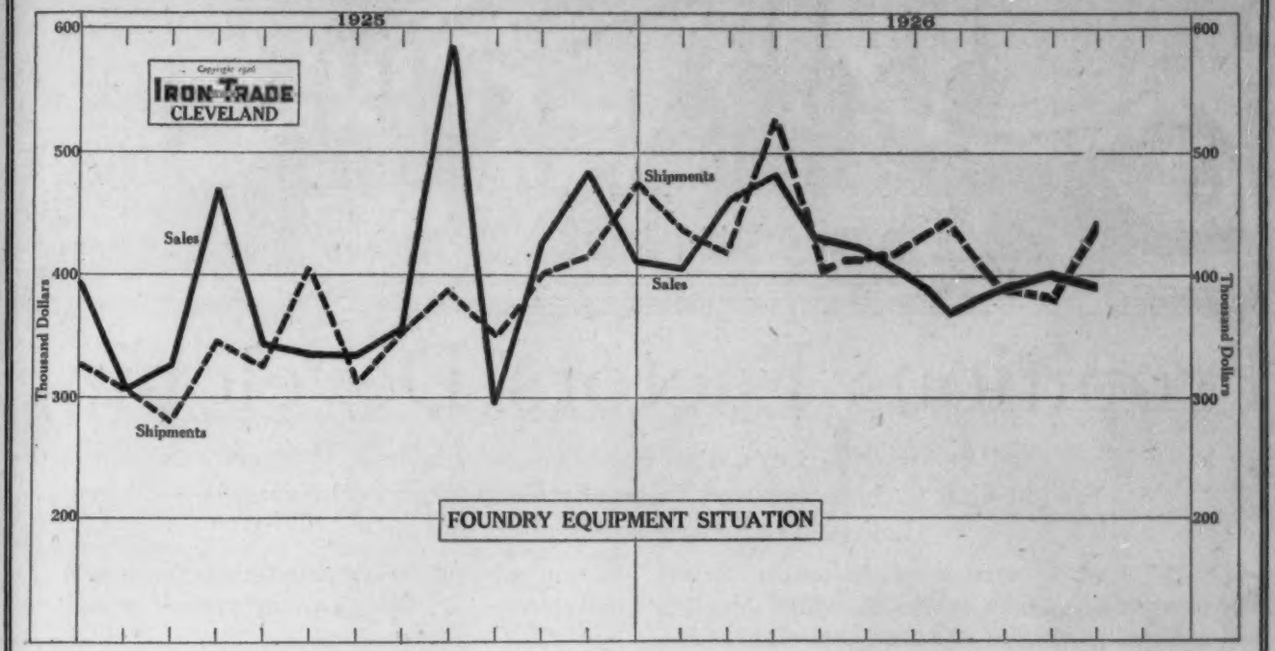
THE volume of new building contracts in 27 eastern states, as reported by the F. W. Dodge Corp., amounted to 61,037,100 square feet. This was a small decline from a total of 62,828,600 square feet reported in October. Compared with November, 1925, there was a decrease of 10 per cent. Residential awards amounted to 38,984,000 square feet compared with 44,586,000 square feet in November, 1925. The volume of awards for industrial building declined to 5,674,700 square feet in November.

Freight Traffic

FREIGHT loadings in the week ended Nov. 27 totaled 942,792 cars. This drop from 1,078,812 cars in the preceding week was partly due to the Thanksgiving holiday. Compared with the corresponding Thanksgiving week of one year before, there was a gain of 19,000 cars. This was the first week since the holiday week of July 10 in which loadings have fallen below the million mark. Since the first of the year 45,529,612 cars have been loaded, an increase of 4.2 per cent over last year.



The Business Trend

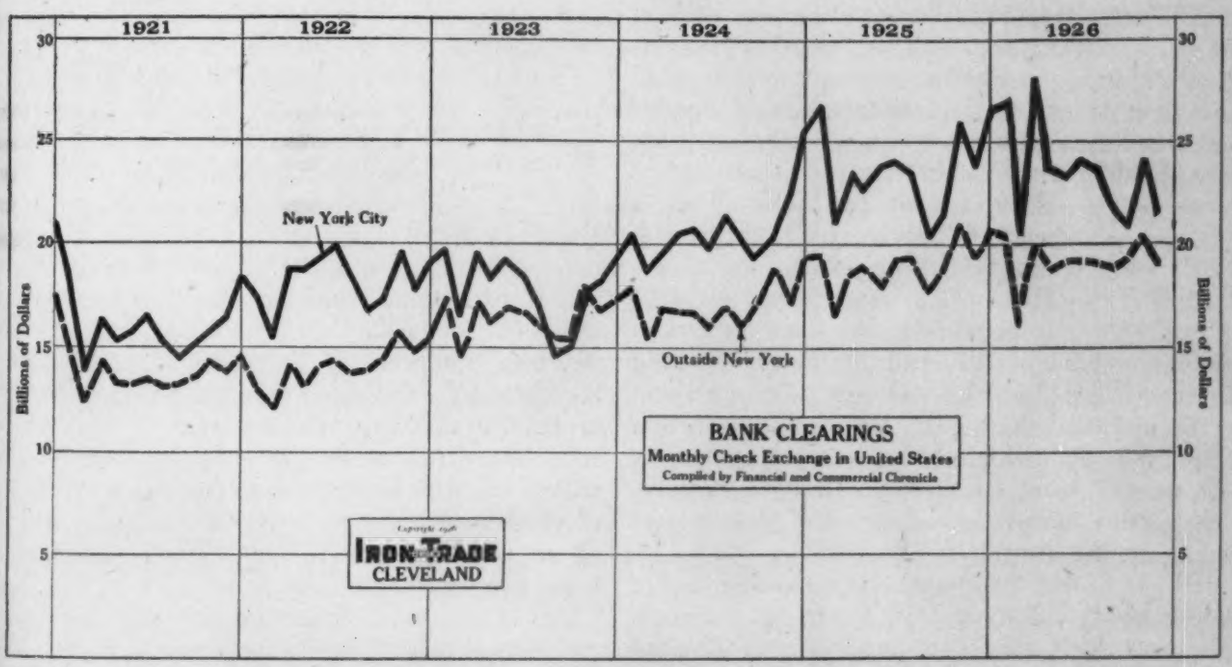


Foundry Equipment

SALES of foundry equipment in October were valued at $396,354 according to reports of 13 manufacturers to the Foundry Equipment Manufacturers association. This was 1 per cent below the total for September. Shipments in October amounted to $447,189 registering a gain of 18 per cent over September. There was a loss, however, of 0.5 per cent from October, 1925. Unfilled orders on Nov. 1 were valued at $524,612, a slight decrease over $527,273 on Oct. 1.

Bank Clearings

BANK exchanges at leading clearing houses of the country in November showed a decrease of 8.4 per cent from the total for the preceding month. They were 3.9 per cent less than the turnover in November, 1925. In New York city exchanges aggregated $22,251,578,000. This was a loss of 8.5 per cent from October and one of 5.2 per cent from November, 1925. Outside of New York city clearings amounted to $18,884,769,000. This was a decrease of 8.2 per cent from October.



Propitious Factors Developing

Market is Enlivened by Growing Interest in First Quarter Pig Iron, Prospect of 14,000 More Freight Cars Coming Out and Unusually Good Week in Structurals—Believe Production is About at Bottom

SHAFTS of a number of favorable factors pierce the seasonal dullness which blankets a large portion of the iron and steel industry. Tentative inquiry for 14,000 freight cars is before car builders, in addition to the 18,000 definitely out for figures. Car awards the past week approximated 3000, or almost as many in all of November. Structural steel lettings have totaled 78,401 tons, making it the largest week in two years. Pig iron has been quickened by new interest in first quarter requirements and the week's sales and inquiries have been the heaviest since the flurry over coke subsided.

Production of iron and steel suffered no appreciable loss in the past week and at 70 to 75 per cent for the industry as a whole is believed to be scraping bottom. Steel corporation subsidiaries are operating at about 78 per cent. Consumers' inventories are falling to such a low point and material will be needed so urgently as January opens that considerable tonnage must be in transit in the last few days of December to safeguard against stringencies. Operations should shortly reflect this condition.

Bookings Top Shipments

Bookings for the industry as a whole probably exceed shipments, due to the preponderance of orders which consumers will take in beginning with January and to the large volume of 1927 rail and track fastening business being formally entered. The increase in the unfilled tonnage of the Steel corporation as of Nov. 30, bringing the total commitments to 3,807,447 tons, marked the third successive gain by this barometer. Large tin plate orders booked by the American Sheet & Tin Plate Co., which has broken its records by operating its tin plate capacity full since Dec. 1, are not included.

By way of a stop gap, producers of finished steel are receiving some spot business from consumers who underestimated their December requirements. In this category are a few automobile manufacturers.

Big Business For Mills

Freight cars definitely placed in the past week will bring about 30,000 tons of finished material to the mills. These awards include 2000 by the Norfolk & Western, which it placed with two builders, 500 by the Great Northern and 300 by the Chicago & Eastern Illinois. Included in the new business facing freight car builders is 5200 cars by the Illinois Central in addition to the 4000 for which it already is inquiring. The present status of the car market, which is 18,000 pending, 14,000 tentative and nearly 3500 actually awarded so far this month, assigns 355,000 tons of finished steel and nearly 175,000 tons in miscellaneous iron and steel products to the industry. The bulk of this business will go to western mills.

Some Melters More Active

Some melters of pig iron continue reluctant to consider their first quarter needs because of the labor situation, and in this stand they have been strengthened by the decision of important coal and coke interests to defer a reduction in wage rates until next month. But inquiries as a whole have become much more numerous. Probably 20,000 tons is active before pig iron producers at Cleveland. The Standard Sanitary Mfg. Co. is out for 6000 tons, with the probability that this will be increased. The American Steel Foundries has been quoted $18.50, valley, on 2500 to 4000 tons of basic, a reduction of 50 cents under the previous quotation. Sales of low phosphorus iron in the Philadelphia district have totaled 15,000 tons.

At 78,401 tons, structural lettings this week reached a height rarely attained in December. Awards in the New York metropolitan district

alone aggregated over 30,000 tons, of which 12,800 tons was for subway construction. Inquiry in the structural market is headed by 40,000 tons for a New York Central railroad office building in the Grand Central terminal district of New York. The Chesapeake & Hocking railroad, to link the Chesapeake & Ohio and the Hocking Valley railroads in Ohio, has placed 9400 tons of bridge work.

IRON TRADE REVIEW composite of fourteen leading iron and steel products again has declined because of adjustments in pig iron prices. This week it is $38.22, compared with $38.24 last week and $39.14 for last December.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Dec. 15, 1926	Nov. 1926	Sept. 1926	Dec. 1925
PIG IRON				
Bessemer, valley, del., Pittsburgh	$21.76	22.01	19.96	22.76
Basic, valley	19.00	18.75	17.30	20.00
Basic, eastern del., eastern Pa.	22.75	22.50	20.76	23.00
*No. 2 foundry, del., Pittsburgh	20.76	21.36	19.46	22.26
No. 2 foundry, Chicago	21.00	21.00	21.00	25.00
*Southern No. 2, Birmingham	20.00	20.00	20.80	21.60
*Southern Ohio, No. 2 Ironton	20.00	20.00	20.00	21.10
**No. 2X, Virginia furnace	23.00	22.75	23.00	23.30
**No. 2, eastern del., Phila.	23.76	23.51	22.26	24.26
Malleable, valley	19.00	19.75	17.70	20.50
Malleable, Chicago	21.00	21.00	21.00	23.00
Lake Superior charcoal, Chicago	27.04	27.04	29.04	29.04
Gray forge, val., del., Pittsburgh	20.26	21.01	19.11	21.76
Ferromanganese, del., Pittsburgh	104.79	104.79	92.79	119.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	3.50	4.75	3.25	4.00
Connellsville, foundry, ovens	4.50	5.85	4.50	5.10
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	36.00	36.00	36.00	36.60
Sheet bars, open-hearth, Pittsburgh	36.00	36.00	36.00	36.60
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	35.20
Wire rods, Pittsburgh	45.00	45.00	45.00	45.40
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	2.00	2.00	2.00
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, Philadelphia	2.32	2.32	2.27	2.32
Iron bars, Philadelphia	2.27	2.22	2.22	2.22
Iron bars, Chicago, mill	2.00	2.00	2.00	2.00
Beams, Pittsburgh	2.00	2.00	2.00	1.95
Beams, Philadelphia	2.22	2.22	2.22	2.17
Beams, Chicago	2.10	2.10	2.10	2.10
Tank plates, Pittsburgh	1.90	1.90	1.90	1.90
Tank plates, Philadelphia	2.22	2.22	2.22	2.07
Tank plates, Chicago	2.10	2.10	2.10	2.10
Sheets, black, No. 24, Pittsburgh	3.00	3.10	3.05	3.35†
Sheets, blue anl., No. 10, Pittsburgh	2.30	2.40	2.30	2.50
Sheets, galvanized, No. 24, Pittsburgh	3.95	3.95	3.95	4.60†
Sheets, black, No. 24, Chicago	3.20	3.25	3.15	3.50†
Sheets, blue anl., No. 10, Chicago	2.50	2.55	2.45	2.65
Sheets, galvanized, No. 24, Chicago	4.05	4.10	4.00	4.75†
Wire nails, Pittsburgh	2.65	2.65	2.65	2.65
Wire nails, Chicago	2.70	2.70	2.70	2.70
Tin plate per base box, Pittsburgh	$5.50	5.50	5.50	5.50
†Based on No. 28 gage.				
OLD MATERIAL				
Heavy melting steel, Pittsburgh	17.00	17.00	17.75	19.00
Heavy melting steel, eastern Pa.	15.50	15.95	16.85	17.65
Heavy melting steel, Chicago	13.00	13.00	14.10	15.50
No. 1 wrought, eastern Pa.	16.00	17.00	17.00	18.75
No. 1 wrought, Chicago	13.75	14.10	14.55	15.40
Rails for rolling, Chicago	16.50	16.50	17.25	18.55

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Dec. 15, 1926)	$38.22
Last week (Dec. 8, 1926)	38.24
One month ago (November, 1926)	38.43
Three months ago (September, 1926)	37.76
One year ago (December, 1925)	39.14
Ten years ago (December, 1916)	53.68
Thirteen years ago (December, 1913)	23.29

Late News Flashes

Expect Cold-Drawn Announcement Soon

Cleveland, Dec. 14.—Reports persist that negotiations looking toward the consolidation of a number of cold-drawn steel interests will come to a head about Jan. 1. At least one Chicago interest now is said to figure in the proposed merger.

Bethlehem Hearing Is Put Over

Washington, Dec. 14.—Further testimony in the merger complaint against the Bethlehem Steel Corp., will not be taken by the federal trade commission until after Jan. 1. Whether the next hearing will be conducted here or in New York has not been decided.

Rail Mill Gait 75 Per Cent

Chicago, Dec. 14.—Rail mill operations have reached 75 per cent, where they will remain until Jan. 1, when full operations will prevail. Plate mill production has been reduced slightly. Twenty-four of the 36 steel works blast furnaces are active. The leading interest has eight stacks in blast at Gary, six at South Chicago and one at Joliet out of a total of 27.

Pittsburgh Operations Again Down

Pittsburgh, Dec. 14.—The average of steel mill operations here is about 65 per cent. One or two independents are only operating 50 per cent, but Steel corporation units are on a higher basis. The Jones & Laughlin Steel Corp. banked a blast furnace in its Eliza group, giving it 10 out of 12 active, and early last week the Pittsburgh Steel Co. banked one of its two stacks. Blast furnace operations likewise are sagging in the Youngstown territory, Republic Iron & Steel Co. and Youngstown Sheet & Tube Co. each taking off a stack.

Hear Pig Iron Rate Changes at Chicago

Chicago, Dec. 14.—Pig iron producers, melters and shippers from Ohio, Michigan, Kentucky and Indiana appeared today both in protest and support of reductions in pig iron freight rates proposed by railroads from northern Ohio to Indiana and other points in central association territory, at a hearing before Examiner Walsh of the interstate commerce commission. Under proposed rates, the percentage of high iron rates to sixth class rates from Cleveland would be increased while the Michigan percentage would be lowered, Cleveland furnace interests argued. Representatives of Michigan foundries backed the proposed rates to accommodate shipments from the Jackson county, Ohio, district.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Philadelphia	40.30
Chicago	35.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	45.30

SHEET BARS

Pittsburgh	$36.00
Youngstown	36.00

SLABS

Pittsburgh	$35.00
Youngstown	35.00

WIRE RODS

Pittsburgh	45.00
Cleveland	45.00
Chicago	46.00

Standard extras, $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	2.00c
Philadelphia	2.17c to 2.32c
New York	2.19c to 2.34c
Chicago	2.10c
Cleveland	2.19c
Birmingham	2.15c to 2.25c

Steel Plates

Pittsburgh	1.90c
Philadelphia	2.22c
New York	2.24c
Chicago	2.10c
Cleveland	2.09c
Birmingham	2.05c to 2.15c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c
Pittsburgh, cold finishing	2.15c
Pittsburgh, forging quality	2.15c
Philadelphia, soft steel	2.32c to 2.42c
New York, soft steel	2.34c to 2.44c
Chicago, soft steel	2.10c
*Cleveland, soft steel	2.00c to 2.19c
Birmingham, soft steel	2.15c to 2.25c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c to 2.10c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	1.90c to 2.00c
Mill, rail steel	1.80c
Philadelphia, common iron	2.22c to 2.32c
New York, common iron	2.24c to 2.34c
Chicago, common iron	2.00c

*The 2.00c price applies to a limited range of forms and sizes.

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh over 6 in.	2.30c
Hot rolled strip steel, Pittsburgh, stamping quality, over 6 in.	2.30c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh	3.25c to 3.50c
Worcester Mass	3.90c
Chicago	3.80c to 4.05c

Cold Finished Steel

Cold finished steel bars, drawn, or rolled, Pittsburgh, Chicago carloads	2.30c to 2.40c
Less carload	2.50c to 2.65c
Steel shafting turned and polished Pittsburgh, Chicago	2.60c

Screw stock base Cleveland $1 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—

2300 (3½ per cent nickel	4.40c to 4.50c
3100 (Nickel chromium)	3.40c to 3.50c
6100 (Chrome vanadium)	4.25c to 4.30c
6100 (Chrome vanad. spring)	3.85c
9250 Silico-mang. spring)	3.25c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	23.00 to 25.00
Light rails, 25 to 45, mills	36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c to 2.90c
Spikes, small railroad, 7-16-inch and smaller, Pitts	2.90c to 3.00c
Spikes, boat and barge, Pitts.	3.10c
Spikes, railroad, Chicago	2.90c
Track bolts, Pitts. standard	3.90c to 4.25c
Track bolts, Chicago	3.90c
Tie plates, Chicago, Pittsburgh	2.35c

Wire Products

To Jobbers in Carloads

Dealers 5 cents per 100 pounds extra

F.o.b. Cleveland and Pittsburgh base.

Wire nails	2.65c
Galvanized nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c

Coated nails, 100 lb. kegs, subject to Sept. 1, 1926, extra card over wire nail base.

Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts	$20.03

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Cleveland-Pittsburgh base on products made there; Duluth $2 higher, Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 24, Pittsburgh base	3.00c to 3.10c
No. 24, Philadelphia, delivered	3.32c to 3.42c
No. 24, Gary, Indiana Harbor	3.20c
No. 24, Chicago, delivered	3.25c

TIN MILL, BLACK

No. 28, Pittsburgh	3.25c
No. 28, Gary base	3.35c

GALVANIZED

No. 24, Pittsburgh, base	3.95c
No. 24, Philadelphia, delivered	4.17c to 4.27c
No. 24, Gary, Indiana Harbor	4.05c
No. 24, Chicago, delivered	4.10c

BLUE ANNEALED

No. 10, Pittsburgh, base	2.30c to 2.40c
No. 10, Philadelphia, delivered	2.62c to 2.72c
No. 10, Gary, Indiana Harbor	2.50c
No. 10, Chicago, delivered	2.55c

AUTOMOBILE SHEETS

No. 20, Pittsburgh, base	4.25c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.50

Gary, Ind., base 10 cents higher.

Long ternes, No. 24, base	4.80

*This price is subject to quantity differentials established by individual regulations.

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del. 2½ points less.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3½-inch	68½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled 3¼ to 3½-inch	46 off

Further discounts of seven 5 per cents allowed for carloads and six 5 per cents for less-carload, on lap welded steel. On seamless hot rolled several more 5 per cents allowed.

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.80c
Cut nails, c. l., f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$51.20 to 52.20
Six-inch to 24-inch, Chicago	47.20 to 48.20
Over 24-inch, Chicago	45.20
Four-inch, Birmingham	43.00 to 44.00
Six-inch and over, Birming'm	37.00 to 38.00
Four-inch, New York	55.50 to 56.60
Six-inch and over, New York	51.50 to 52.60
Standard fittings, Bir. base	$110.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Prices named are for l. c. l. lots. Carloads take an extra 5 per cent off on carriage, machine and plow bolts and lag screws.

*Hot pressed square tapped or blank	$4.00 off list
*Ditto, hexagon	$4.40 off list
*Cold punched square or hexagon blank	$4.10 off list
*Ditto tapped	$4.10 off list
Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger	75, 10 and 5 off
Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off
Cold finished S. A. E. semifinished ⅝-inch and larger	75, 10, 10 and 5 off
Cold finished S. A. E. semifinished 9/16-inch and smaller	80, 10, 10 and 5 off

Add 25 cents per cwt. on cold punched and hot pressed nuts.

CARRIAGE BOLTS

(⅜ x 6-inch, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅜ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off
Rough stud bolts with nuts (250 pieces or more of a size)	40 and 10 off

Stove bolts, 80, 10 and 5 off in bulk. In packages, 80, 10 and 5 plus 2½ off.

Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000 f.o.b. maker's plant, frt. allowed

	S.A.E. Castellated	U.S.S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	28.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.40c to 2.60c
Structural rivets, c.l., Chi	2.60c to 2.75c
**Rivets, 7/16-inch and smaller, Pittsburgh, Cleveland, 70, 10 and 5 to 70 and 10 off.	
**Rivets, 7/16-inch and smaller, Chicago	70, 10 and 5 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chicago dist.	$6.40 to 6.50 off
Wrought c.l., Pitts. dist.	6.75 to 6.50 off
Lock washers, f.o.b. factory	85 to 90 off

Pig Iron

Inquiries Develop Larger Tonnages—Prices Work Lower—Sales Limited—Shipments Holding Up Well

A DRAB pig iron market has been relieved by a few rays of sunshine in the form of good inquiries, although they evidently have had the effect of depressing prices. Inquiries originating from western Pennsylvania, Ohio, Indiana and Michigan sources in the past week total about 30,000 tons. The Standard Sanitary Mfg. Co. leads off with requests for prices on 6000 tons or more for New Brighton and Allegheny, Pa., plants, an indefinite tonnage for Baltimore, and 3000 tons for Louisville, Ky. The American Steel Foundries has out an inquiry for 2500 to 4000 tons of basic. Numerous miscellaneous inquiries call for 500 to 2000 tons of foundry and malleable grades. Sales generally have not been large.

PITTSBURGH, Dec. 14.—Inquiries for pig iron are more numerous. The Standard Sanitary Mfg. Co. is in the market for 6000 tons for its New Brighton and Allegheny plants, although the tonnage may develop larger proportions by the time orders are distributed. It also wants a tonnage for Baltimore and 3000 tons of northern or southern iron for its Louisville, Ky., plant. Withdrawal of a price of $20, base, valley, by one or two sellers leaves $19, valley, the general quotation applying on foundry iron, confirmed by sales. A few single carloads in 100-ton lots of No. 1 iron have been sold in the week at $20, valley. The Elliott Co., Jeanette, Pa., wants 300 tons of foundry iron. It has been quoted $19, base, valley. Malleable iron is available at the same figure. The market for steelmaking iron is featured by an inquiry from the American Steel Foundries for 2500 to 4000 tons of basic, for first quarter. A price of $18.50, valley, has been quoted. The last transaction involving standard basic noted here was made at $19, valley. Sales of a few single carloads or 100-ton lots of bessemer iron are reported at $20, valley. A few inquiries are pending for low phosphorus iron on which $28, valley, is quoted.

Boston, Dec. 14.—Pig iron sales and inquiry have dropped to a low point. Requests are made for heavy shipment on contracts. In some cases January deliveries are being anticipated. A little softening has appeared at Buffalo where sales of No. 2X iron (2.25 to 2.75 silicon) have been entered at $18.75, furnace. The Everett, Mass., furnace quotes $21.50, furnace, for the same grade. Foundry operations in the district are fully equal to the record of a year ago.

New York, Dec. 14.—Pig iron buying has been somewhat better but the total probably did not exceed 5000 tons of foundry. New inquiry is small; it includes 200 to 300 tons of 2.75 to 3.25 silicon for first quarter for the Potter Printing Press Co., Plainfield, N. J. Prices are unchanged at $22.50, base, eastern Pennsylvania furnace, and $19, base, Buffalo. The Punxsy furnace at Punxsutawney, Pa., has gone out of blast.

Buffalo, Dec. 14.—An order for 1000 tons of pig iron wanted at Port Chester has been placed, leaving nothing of large tonnage pending. Rumors of price cutting on outside business are expected to bring out some first quarter inquiry. Buffalo furnace operators say $19, base, is firm. Fourteen furnaces are in blast in this district. Shipments on old orders have been exceptionally heavy this month, many consumers taking iron in advance of schedules.

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$20.00
Bessemer, Pittsburgh del.	21.76
Basic, valley	18.50
Basic, Pittsburgh del.	20.26
Basic, Buffalo	19.00 to 19.50
Basic, del., eastern Pa.	22.50 to 23.25
Malleable, valley	19.00
Malleable, del. Pittsburgh	20.76
Malleable, del.; Cleveland	20.50
Malleable, Chicago	21.00
Malleable, Buffalo	19.00 to 20.00
Malleable, del., eastern Pa.	23.75 to 24.00
No. 1X Eastern del., Phila.	24.26 to 24.76
No. IX, Buffalo	20.50 to 21.00
No. 1 foundry, Chicago	21.50
No. 2 foundry, valley	19.00
No. 2 foundry, del. Pittsburgh	20.76
No. 2 foundry, Buffalo	19.00 to 20.00
No. 2 foundry, Everett, Mass.	21.50 to 22.50
No. 2 foundry, Chicago	21.00
No. 2 foundry, Granite City	21.00 to 21.50
No. 2 foundry, Ironton	20.00
No. 2 foundry del., Cleveland	20.50
No. 2 foundry, del., Phila.	23.26 to 23.76
No. 2 foundry, N. J., tidewater	22.28 to 24.76
No. 2X, eastern del., Phila.	23.76 to 24.26
No. 2X east N. J., tidewater	22.78 to 25.26
No. 2X, foundry, Buffalo	20.00 to 20.50
No. 2X, eastern del., Boston	25.15 to 25.65
No. 2X, Buffalo, del., Boston	23.41 to 23.91
Continental foundry f.o.b. Boston	21.50 to 22.50
No. 2 Alabama, Birmingham	20.00
No. 2 Alabama, del. Cincinnati	23.69
No. 2 Tenn., Birmingham base	20.50
No. 2 Tenn., del. Cincinnati	24.19
No. 2 Alabama, del. Philadelphia	26.01
No. 2 Alabama, del. Chicago	26.01
No. 2 Alabama, del Chicago (barge and rail)	25.18
No. 2 Alabama, del. Boston (rail and water)	26.81
No. 2 Alabama, del. Cleveland	26.01
No. 2 Alabama, del. St. Louis	24.42
No. 2X Virginia	23.00
No. 2X, Virginia, del. Phila.	28.17
No. 2X, Virginia, del. Jers. City	28.54
No. 2X, Virginia, del., Boston	28.92
Gray forge, eastern Pa.	22.50 to 23.25
Gray forge, val. del. Pitts.	20.26
Low phos., standard, valley	28.00
Low phos., standard, Phila.	25.76 to 28.29
Low phos., Lebanon	25.00
Charcoal, Birmingham	29.00 to 30.00
Charcoal, Superior, del. Chicago	27.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $25.50; 6 per cent $26.50; 7 per cent $27.50; 8 per cent $28.50; 9 per cent $30.00; 10 per cent $32.00; 11 per cent $34.00; 12 per cent $36.00; 13 per cent $38.00; and 14 per cent $40.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $34.00; 11 per cent $36.00; 12 per cent $38.00; 13 per cent $40.00; 14 per cent $42.00; 15 per cent $45.00; 16 per cent $47.00; 17 per cent $49.50.

*Duty paid, delivered Philadelphia consumers. Prices are f.o.b. furnace except where stated otherwise.

Cleveland, Dec. 14.—Renewed interest is exhibited in pig iron for first quarter, furnace interests with headquarters here this week receiving inquiries for more than 20,000 tons, mainly for delivery after Jan. 1. A Pennsylvania foundry wants 5000 to 6000 tons and another Pennsylvania consumer 4000 tons of basic. A Chicago interest is inquiring for 2000 tons of malleable for delivery in Indiana. A nearby foundry is negotiating for 1200 tons of foundry iron, and another melter near Cleveland for 800 tons. Some buyers have stated quotations are too high and are waiting further developments. Sales for the week generally were low, but one furnace interest booked a considerable tonnage including one lot of 10,000 tons, and the total for the entire group here is about 25,000 tons. A Cleveland furnace reports taking some business for a downstate melter at $19.25, base, furnace, although other offers have been made at $19, from Cleveland and other lake producers. Small lots of foundry iron have sold in Cleveland at $20, base, furnace. A Cleveland furnace is quoting $19, Cleveland, on inquiries for basic, but this might be shaded for delivery to distant points.

Chicago, Dec. 14.—While melters are ordering pig iron in small lots, the bulk of shipments apparently are going into the melt directly. The rate of shipments the past several days has been above November but the holiday season is expected to reduce shipments sharply. While buying is light, 20 to 25 per cent of first quarter business remains to be placed. The inquiry for 600 tons of basic by a Milwaukee melter has been deferred temporarily. Hold-up orders are comparatively few. Operations are unchanged, with eight merchant stacks in blast. The price of $21, Chicago furnace, continues as the ruling quotation for No. 2 foundry and malleable.

St. Louis, Dec. 14.—Pig iron melters are purchasing cautiously, and only sufficient for immediate requirements, but with stocks in consumers' yards at low ebb there have been a number of instances in which consum-

(*Concluded on Page* 1583)

Coke

Market Is Softer as Furnaces and Foundries Defer Action—Wage Reductions Postponed

REDUCTION of coal mine wages in the Connellsville district has been postponed indefinitely, with the possibility of notices being posted Jan. 1. Users of furnace coke are deferring action, though protected by wage clauses, and the market is 25 cents lower than a week ago, now quotable at $3.50 to $4.25. Some users are arranging with regular sources at open prices.

Pittsburgh, Dec. 14.—Posting of notices of a coal wage reduction to the basis prevailing prior to Nov. 1, which was scheduled for Nov. 16, has been postponed indefinitely as a result of a meeting last Saturday. The notices may be posted Jan. 1. In the meantime many users of coke are taking this as an excuse to defer contract action, for while they are protected by a wage clause they prefer to have a clearer understanding. It is difficult to obtain a proper lineup of quotations for future shipments. Several interests are adhering to $4.25 to $4.50, equivalent to $3.50 to $3.75 under the former wage basis. So far these quotations have been unattractive to blast furnaces. It is understood, however, several arrangements will be extended with present sources of supply, actual prices to be determined later. From $3.50 to $3.75 represent the spot market, although one carload brought $4.25 yesterday. Several sales of five or ten cars at a time are quoted at $3.50, minimum. Users of foundry coke are not showing any hurry to close contracts, although numerous inquiries are pending. A few small sales are noted at $5.50. One seller having ten carloads for sale encountered difficulty in obtaining more than $4.75 and sold some at $4.50. Prices below that minimum apply to questionable coke. Mine run gas coal is selling at $2.25 to $2.35 with three-quarter lump quoted at $2.50 to $2.75. Some distress sales are bringing lower figures.

Production of coke in the Connellville region for the week ended Dec. 4 was 138,650 tons, against 142,360 tons the preceding week, according to the *Connellsville Courier*.

Boston, Dec. 14.—Foundry coke contracts for first half practically cover all requirements. Demand for spot tonnage is light and the price has dropped from $14, delivered, to $13.50, the same as for contract coke.

New York, Dec. 14.—Owing to wage uncertainties there is a disposition to refrain from offering beehive coke for shipment beyond Dec. 31. Current prices for December range from $4.75 to $5.25, Connellsville, for foundry and $3.75 to $4.00 for furnace. Northern New Jersey by-product foundry coke continues $10.59 to $11.77, delivered at Newark and other northern New Jersey consuming points, in accordance with the freight rate. Many consumers have requested that no coke be shipped to them after Dec. 15 because they will shut down for inventory.

St. Louis, Dec. 14.—A general easing is noted in the coke situation. Demands are less urgent. Specifications by the general manufacturing trade also have fallen off. Prices are steady.

Birmingham, Ala., Dec. 14.—Contracts for by-product foundry coke are being booked to such an extent that prospects are bright for six months continuous operations. Quotations generally are $5.50, with occasional spot orders at $6. Sloss-Sheffield Steel & Iron Co., through the Semet-Solvay Co. will develop the 120-oven by-product plant at North Birmingham so that production will be increased at least 50 per cent.

Cincinnati, Dec. 14.—Cold weather has stimulated demand for domestic coke and other grades are moving on a fairly satisfactory scale. Specifications for by-product fuel have exceeded expectations. There are rumors of price reductions Jan. 1.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville furnace	$3.50 to 4.25
Connellsville foundry	4.50 to 5.00
New River foundry	7.00 to 9.00
New River furnace	6.00
Wise county furnace	5.50
Wise county foundry	6.00
Alabama foundry	5.00 to 6.00

By-Product

Foundry, Newark, N. J.; del.	10.59 to 11.77
Foundry, Chicago, ovens	10.25
Foundry, New England, del.	13.50
Foundry, St. Louis	10.50
Foundry, Granite City, Ill.	10.50
Foundry, Birmingham	5.50 to 6.00
Foundry Indianapolis, del.	10.25
Foundry, Ashland, Ky.	8.00
Foundry, Portsmouth, O.	8.00

Ferroalloys

Some Ferromanganese Sold, Guaranteed Against Decline

Pittsburgh, Dec. 14.—Some additional business has been done for the first half in ferromanganese, but no new orders are noted in the spot market. The price evidently is firm at $100, seaboard base. Some larger users now are signing contracts at that level guaranteed against decline. One domestic maker selling ferromanganese is contracting at $100 but does not obligate itself to supply the material if its customers later are able to buy elsewhere at a lower figure. Customers are practically all under cover for 50 per cent ferrosilicon at $85, freight allowed, and as was the case last year makers probably will ask a little more for spot sales. No inquiries at present are current. Occasionally an inquiry for a carload or two of low-grade ferrosilicon is closed at the quoted market.

New York, Dec. 14.—A moderate tonnage of English ferromangese has been sold for the first half at $100 duty paid, tidewater. A considerable amount of first half business remains to be placed.

Reservations have been made for several good tonnages of spiegeleisen for first half. The price is to be fixed later. A number of consumers have asked that shipments on current contracts be held up until the end of the year. Spot demand, however, is better than in a long time, the price on spot car loads continuing $37 furnace on the 19 to 21 per cent grade.

Prices of special ferroalloys are steady. More contracts for next year are being negotiated. After market value of tungsten ore in Europe had gone slightly over £1 a long ton unit, equal to at least $11.50 a short ton unit, duty paid, in this country, the market weakened to 18s 6d at the opening of this week. The market here did not follow, users being covered. Ore in stock has been sold for re-export, so that stocks have been cut. The market here is around $11, nominal, on wolframite and slightly higher on scheelite. Ferrotungsten is around $1.05 a pound contained, quotations being noted above and below.

Chicago, Dec. 14.—Bookings of ferromanganese at $100, seaboard, are being taken, but placements are light. Foreign competition has brought about a price of $37, base, for 19 to 20 per cent spiegeleisen. Ferrosilicon and chrome needs are practically covered.

Anthracite coal was discovered in Rhode Island and Massachusetts in 1760.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater	$100.00
Ferromanganese delivered Pittsburgh	104.79
Spiegeleisen 19 to 21 per cent domestic furnace	37.00
Ferrosilicon, 50 per cent freight allowed	85.00 to 87.50
Ferrotungsten standard, per pound contained	1.05
Ferrochrome, 60 to 70 chromium, 4 to 6 carbon, cents per pound contained, delivered	11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.15 to 3.65
Ferro-carbon-titanium, car lots, producers plant, net ton	200.00
Ferrophosphorus, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent materials)	122.50

†Duty paid.

Plates

New Requirements Small for Prompt Shipment—Prices Show Steadiness

THE market for plates is less active, though prices appear to be holding a steady course. Buying is restricted to comparatively small lots mainly for prompt shipment, which is available with most mills. About 7500 tons are pending at Chicago for oil tanks. Some tonnage has been booked for the Southwest at 2.00c, Chicago, though the local price is 2.10c.

PLATE PRICES, PAGE 1568

Pittsburgh, Dec. 14.—Only a few plate customers have signed up for first quarter. Fabricating shops generally contemplate action within the next few weeks. The price generally quoted is 1.90c for prompt or for first quarter delivery. Some small awards have been made and one large tank contract has been placed verbally, though details will be withheld until the formal order. Prospects are bright for early 1927 activity in connection with river craft.

Boston, Dec. 14.—First quarter plate contracts are being entered at 1.90c, Pittsburgh, or 2.265c, delivered. A round tonnage is wanted for tanks for the Beacon Oil Co., Boston. Current awards are small. Much bridge work is in sight.

New York, Dec. 14.—T. A. Gillespie & Co., New York, are low bidders on a pipe line for Kearny, N. J., involving about 2600 tons of plates. The fabricated market has been featured here the past week by the letting of some oil tanks which do not involve a large tonnage. Further contracting has been done for first quarter plates. Current demand is somewhat smaller but is fair. The market is firm at 1.90c, base, Pittsburgh.

Cleveland, Dec. 14.—Demand for plates is appreciably less than in November but in some instances users are finding themselves short of December requirements and are placing spot business. Practically prompt delivery is obtainable on all sizes. One maker has booked about 400 tons for ship repairs. Several lake steamers are pending but lack action. Sellers universally note that users do not question the quotation of 1.90c, Pittsburgh, or 2.09c, delivered Cleveland.

Chicago, Dec. 14.—Some plate tonnages have been reported booked in this territory and in the Southwest at 2.00c, Chicago, but Chicago mills are quoting 2.10c for general December and first quarter business. Oil tankage is being handled steadily, and bookings are only for immediate rolling. Little is in sight except 7500 to 8000 tons in inquiries from oil tank builders. Heavy tonnages of universal plates are expected early next year from car builders.

Philadelphia, Dec. 14.—The fact plate consumers have been buying hand-to-mouth, thus preventing them from building up stocks, is having a beneficial effect in the present market. Mill bookings have shrunk somewhat, but the total is better than expected. Railroads continue to specify consistently, particularly the Pennsylvania. The price is firm at 1.90c, Pittsburgh.

CONTRACTS PENDING

930 tons, three 80,000-barrel tanks, Associated Oil Co., Los Angeles; bids in.
900 tons, pipe line, East Bay Water Co., Oakland, Calif.; bids opened.
375 tons, Rockridge siphon, East Bay Municipal Utility district, Oakland, Calif.; bids opened.

Engineer's Head Guest at Dinner Meeting

Approximately 250 attended a recent monthly dinner meeting of the Indiana section of the Society of Automotive Engineers at Indianapolis at which T. J. Litle, the new chief engineer of the Marmon Motor Car Co., Indianapolis, and president of the National Society of Automotive Engineers, was a guest. Speakers were L. E. Reuhlmann, body engineer, J. Edward Budd Co., Philadelphia; H. Steinbrugge, vice president, Weymann American Body Corp., Indianapolis; James A. Daugherty, Robbins Body Corp., Indianapolis; James Crawford, Auburn Automobile Co., Auburn, Ind.; Fred Duesenberg, Duesenberg Motors Co., Indianapolis; Ben Twyman, president, Weymann Body Corp.; Frederick E. Moscovicks, president Stutz Motor Car Co., Indianapolis, and R. W. Hull, Rex Mfg. Co., Connersville, Ind.

During 1896 and 1897 gray forge pig iron at Pittsburgh fell to $8.50 a ton and bessemer pig iron in the same market to $9.25 a ton.

Semifinished

Less Activity in Market—First Quarter Wire Rod Contracts Equal Those of 1926

SPECIFICATIONS for sheet bars, billets and slabs are slower in developing and considerable tonnage will be carried over to the first quarter. Buying is at a low point, even of the hand-to-mouth kind that has characterized the market. Prices show no deviation from recent levels. Wire rod contracts for first quarter are equal to the comparable period last year.

SEMIFINISHED STEEL PRICES, PAGE 1568

Youngstown, O., Dec. 14.—Consumers of steel billets, sheet bars and wire rods appear slow to indicate their probable needs for the first quarter of 1927. Further evidence appears that quotations for first quarter material will not change from the present prices of $36 for sheet bars and $35 for billets, Pittsburgh and Youngstown bases.

Pittsburgh, Dec. 14.—Semifinished steel specifications are withheld on some of this month's arrangements, and no new buying is noted. Here and there specifications on billets, slabs and sheet bars are slightly better due to improvement in the strip and sheet steel business. Real activity will probably be postponed until after Jan. 1 although it is possible the bulk of buying for January will take place this month. Some forging billet buyers have over-specified on this quarter's contracts, particularly makers of oil well crankshafts. A few general forging makers, however, are behind on their specifications. Wire rod bookings for first quarter are fully comparable with the first quarter of 1926. The price is unchanged at $45. This is true of skelp, the price generally quoted being 1.90c.

Cleveland, Dec. 14.—The market for sheet bars, billets and slabs is dull, prices being nominally unchanged at $36, Cleveland or Youngstown, for sheet bars and $35 for billets and slabs.

Chicago, Dec. 14.—The quotation of $35, base, for billets, is reported firm despite lack of activity in the market. The sheet bar market, at $36, base, is quiet.

Will Sell Fluorspar

Pittsburgh, Dec. 14.—Pilling & Co., Inc., in charge of George Wilson, 1432 Oliver building, Pittsburgh, have been appointed exclusive sales agents for the Pittsburgh district proper and Wheeling, W. Va., for the Hillside Fluor Spar Mines, Rosiclaire, Ill. The arrangement does not apply to Youngstown, Warren or Canton territory.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	13.00 to 13.50
Boston (dealers)	10.50 to 11.00
Buffalo, No. 1	16.50 to 17.00
Buffalo, No. 2	14.75 to 15.25
Chicago	13.00 to 13.50
Cincinnati (dealers)	12.50 to 13.00
Cleveland, No. 1	14.25 to 14.75
Cleveland, No. 2	13.50 to 14.00
Detroit	12.50 to 13.00
Eastern Pennsylvania	15.00 to 16.00
Bethlehem delivery	15.00 to 16.00
New York (dealers) (yard)	9.25 to 9.75
Pittsburgh No. 1	16.50 to 17.00
St. Louis	13.00 to 13.50
Valleys, No. 1	16.00 to 16.50

COMPRESSED SHEETS

Buffalo	15.00 to 15.50
Chicago	11.00 to 11.50
Cleveland	13.00 to 13.50
Detroit	11.00 to 11.75
Pittsburgh	15.25 to 15.75
Valleys	15.00 to 15.50

BUNDLED SHEETS

Buffalo	11.00 to 11.50
Cincinnati (dealers)	8.50 to 9.00
Cleveland	12.00 to 12.50
Eastern Pennsylvania	13.00 to 13.50
Pittsburgh	14.25 to 14.75
St. Louis	8.50 to 9.00

SHEET CLIPPINGS, LOOSE

Chicago	8.25 to 8.75
Cincinnati	6.00 to 6.50
Detroit	8.00 to 8.50
St. Louis	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	12.50 to 13.50
Buffalo	17.00 to 17.50
Chicago	16.75 to 17.00
Cincinnati (dealers)	17.00 to 17.50
Cleveland (over 6 ft.)	14.75 to 15.00
Detroit	13.00 to 14.00
St. Louis	16.00 to 16.50

STOVE PLATE

Birmingham	14.00 to 15.00
Boston (consumers)	13.00 to 13.50
Buffalo	14.25 to 14.75
Chicago (net)	14.00 to 14.50
Cincinnati (dealers) (net)	8.50 to 9.00
Cleveland	11.00 to 11.50
Detroit (net tons)	11.50 to 12.00
Eastern Pennsylvania	13.00
New York (dealers)	10.00 to 11.25
Pittsburgh	13.00 to 13.50
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	18.00 to 18.50
Cincinnati (dealers)	16.50 to 17.00
Eastern Pennsylvania	19.00 to 20.00
Pitts. billet and bloom crops	20.00 to 20.50
Cleveland, billet and bloom crops	18.00 to 18.50

SHOVELING STEEL

Chicago	13.00 to 13.25
Pittsburgh	12.00 to 12.50
St. Louis	13.00 to 13.50

KNUCKLES, COUPLERS, SPRINGS

Chicago	15.50 to 16.00
Eastern Pennsylvania	17.00 to 18.00
Pittsburgh	18.00 to 18.50
St. Louis	14.50 to 15.00

FROGS, SWITCHES, GUARDS

Chicago	14.50 to 15.00
Eastern Pennsylvania	12.00 to 12.50
St. Louis	14.00 to 14.50

ANGLE BARS—STEEL

Buffalo	15.25 to 15.75
Chicago	15.00 to 15.50
St. Louis	13.75 to 14.25

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	11.00 to 12.00
Boston (dealers)	12.00 to 12.50
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	15.00 to 15.50
Chicago, No. 1	13.75 to 14.00
Chicago, No. 2	13.00 to 13.50
Cincinnati, No. 1 (dealers)	11.50 to 12.00
Cleveland, No. 1	11.50 to 12.00
Eastern Pennsylvania	17.00 to 17.50
New York, No. 1 (dealers)	14.50 to 15.00
Pittsburgh, No. 1	13.00 to 13.50
Pittsburgh, No. 2	16.50 to 17.00
St. Louis, No. 1	12.00 to 12.50
St. Louis, No. 2	13.00 to 13.50

WROUGHT PIPE

Boston (dealers)	9.00 to 9.50
Eastern Pennsylvania	14.00 to 14.50
Buffalo	15.00 to 15.50
New York (dealers)	9.25 to 9.75

YARD WROUGHT

Boston	11.00 to 11.50
Eastern Pennsylvania	13.50 to 14.50

BUSHELING

Buffalo	15.00 to 15.50
Chicago, No. 1	11.50 to 12.00
Chicago, No. 2	8.50 to 9.00
Cincinnati, No. 1 (dealers)	8.00 to 8.50
Cleveland No. 1	11.75 to 12.00
Cleveland, No. 2	11.00 to 11.25
Pittsburgh, No. 1	14.25 to 14.75
St. Louis, No. 1	11.50 to 12.00

MACHINE SHOP TURNINGS

Birmingham	8.00 to 8.50
Boston	8.00 to 8.50
Buffalo	10.00 to 10.50
Chicago	7.25 to 7.75
Cincinnati (dealers)	6.00 to 6.50
Cleveland	9.00 to 9.25
Detroit	7.50 to 8.00
Eastern Pennsylvania	13.00 to 13.50
New York (dealers)	9.25 to 9.75
Pittsburgh	11.50 to 12.00
St. Louis	7.00 to 7.50

CAST IRON BORINGS

Birmingham (chemical)	15.50 to 16.00
Birmingham (plain)	8.00 to 8.50
Boston Chemical	10.00 to 10.50
Boston (dealers)	8.00 to 8.50
Buffalo	12.00 to 12.50
Chicago	9.50 to 10.00
Cincinnati (dealers)	6.00 to 6.50
Cleveland	11.00 to 11.50
Detroit	9.00 to 9.50
Eastern Pennsylvania	13.00 to 13.50
Eastern Pennsylvania (chem.)	15.50 to 16.00
New York (dealers)	9.25 to 9.75
Pittsburgh	12.00 to 12.50
St. Louis	10.00 to 10.50
Valleys	13.50

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.00 to 8.50
Buffalo	12.00 to 12.50
Cincinnati (dealers)	5.50 to 6.00
Cleveland	11.75 to 12.00
Detroit	8.50 to 9.00
Eastern Pennsylvania	12.50 to 13.00
New York (dealers)	9.25 to 9.75
Pittsburgh	12.00 to 12.50

PIPES AND FLUES

Chicago (net)	8.25 to 8.75
Cincinnati (dealers)	7.50 to 8.00
St. Louis	10.00 to 10.50

RAILROAD GRATE BARS

Buffalo	13.00 to 13.50
Chicago (net)	13.25 to 13.75
Cleveland	12.00 to 12.50
Eastern Pennsylvania	13.00
New York (dealers)	11.25 to 12.00
St. Louis	14.00 to 14.50

FORGE FLASHINGS

Boston (dealers)	8.50 to 9.00
Buffalo	13.00 to 13.50
Chicago	9.25 to 9.75
Cleveland (over 10 in.)	11.50 to 12.00
Cleveland (under 10 in.)	11.50 to 12.00
Detroit	10.00 to 10.50
Pittsburgh	13.00 to 13.50

FORGE SCRAP

Boston (dealers)	8.50 to 9.00
Chicago	17.00 to 17.50
Eastern Pennsylvania	13.50 to 14.00

ARCH BARS AND TRANSOMS

Chicago (net)	19.00 to 19.25
St. Louis	19.50 to 20.00

Iron Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	9.00 to 9.50
Buffalo	13.50 to 14.00
Chicago	12.00 to 12.50
Cleveland	12.50 to 13.00
Eastern Pennsylvania	14.00 to 14.50
Pittsburgh	14.50 to 15.00
St. Louis	10.50 to 11.00

STEEL CAR AXLES

Birmingham	16.00 to 17.00
Boston (shipping point)	18.00 to 18.50
Buffalo	16.50 to 17.00
Chicago	18.50 to 19.00
Cleveland	16.00 to 16.50
Eastern Pennsylvania	22.00 to 23.00
Pittsburgh	20.00 to 21.00
St. Louis	19.00 to 19.50

SHAFTING

Boston (shipping point)	16.00 to 17.00
Chicago	18.50 to 19.00
Eastern Pennsylvania	21.00 to 22.00
New York (dealers)	17.50 to 18.00
St. Louis	16.50 to 17.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	15.00 to 16.00
Boston (consumers)	17.00 to 17.50
Buffalo, iron	16.00 to 16.50
Buffalo, steel	17.00 to 17.50
Chicago, iron	14.75 to 15.25
Chicago, steel	16.50 to 17.00
Cincinnati	11.50 to 12.00
Eastern Pennsylvania	16.50 to 17.00
New York iron (dealers)	12.50 to 13.50
Pittsburgh, iron	16.00 to 16.50
Pittsburgh, steel	18.00 to 18.50
St. Louis, iron	14.00 to 14.50
St. Louis, steel	15.00 to 15.50

NO. 1 CAST SCRAP

Birmingham, cupola	16.00 to 17.00
Boston	18.00 to 18.50
Buffalo	15.00 to 15.50
Chicago, No. 1 machinery	18.50 to 19.00
Chicago, No. 1 railroad or agricultural	17.50 to 18.00
Cincinnati No. 1 machinery cupola (net tons dealers)	17.00 to 17.50
Cleveland, cupola	16.75 to 17.25
Detroit (net tons)	13.75 to 14.25
Eastern Pennsylvania, cupola	17.00 to 17.50
New York, cupola (dealers)	14.50 to 15.00
Pittsburgh, cupola	16.00 to 16.50
San Francisco, delivered	20.00 to 21.00
Seattle	16.50
St. Louis, railroad	16.00 to 16.50
St. Louis, agricultural	16.00 to 16.50
St. Louis, machinery	19.00 to 19.50
Valleys	17.50

HEAVY CAST

Boston	15.50 to 16.00
Buffalo (breakable)	13.25 to 13.75
Cleveland	13.00 to 13.25
Detroit (automobile) (net tons)	14.50 to 15.00
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	12.75 to 13.50
Pittsburgh	15.00 to 15.50

MALLEABLE

Boston, railroad	19.00 to 19.50
Buffalo	17.00 to 17.50
Chicago, agricultural	15.25 to 15.75
Chicago, railroad	16.00 to 16.50
Cincinnati, railroad (dealers)	14.00 to 14.50
Cincinnati, agricultural (dealers)	13.00 to 13.50
Cleveland, agricultural	15.50 to 16.00
Cleveland, railroad	17.00 to 17.50
Detroit	14.00 to 14.50
Eastern Pennsylvania, railroad	14.00 to 15.00
Pittsburgh, railroad	17.00 to 17.50
St. Louis, agricultural	13.00 to 13.50
St. Louis, railroad	14.00 to 14.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	14.00 to 15.00
Boston (dealers)	12.00 to 12.50
Buffalo	17.25 to 17.75
Chicago	16.50 to 17.00
Cleveland	14.50 to 15.00
Eastern Pennsylvania	17.00 to 17.50
New York	13.75 to 14.25
Pittsburgh district	18.00 to 19.00
St. Louis	15.25 to 15.75

LOCOMOTIVE TIRES

Chicago, No. 1	17.75 to 18.00
Chicago, cut	17.00 to 17.50
St. Louis, No. 1	16.25 to 16.75

LOW PHOSPHORUS PUNCHINGS

Chicago	15.50 to 16.00
Eastern Pennsylvania	17.50 to 18.50
Pittsburgh	18.00 to 19.00

Scrap

Activity Lacks in All Centers, With Weakness and Consumers Indifferent

IN PRACTICALLY every center of production and consumption of iron and steel scrap the situation is dull and inactive, with prices nominal and lower. An occasional purchase by a consumer has not proved helpful and some buyers relied upon to help the market are definitely out for some time. Offers are all at lower prices than last sales.

Chicago, Dec. 14.—Whether present price levels are representative of the iron and steel scrap market or whether the market should go still lower is a moot question among dealers. It is felt generally that heavy melting steel is weaker, but the range holds at $13 to $13.50. Dealers are picking up tonnages at $13 to $13.25, while some recent railroad offerings were bid in at the equivalent of $13.50, delivered. Consumers show little interest in melting steel. Melters of some grades are feeling out prices, but are placing no orders. While some dealers are reported to be preparing to bolster quotations by withdrawing scrap supplies from the market for storage in their yards, this movement does not seem to be general.

Boston, Dec. 14.—While consuming demand for iron and steel scrap lacks improvement, the market in some respects is more active. The Boston & Albany railroad sold 500 tons of heavy melting steel at close to $11.

New York, Dec. 14.—The scrap market continues to mark time, with little fresh consuming demand, and prices unchanged. Dealers, in fact, look for a little fluctuation until after the first of the year, when it would not prove surprising if there would be a downward revision in some grades, notably in borings and turnings and railroad steel. The leading consumer, the Bethlehem Steel Corp., is expected to be out of the market on any tonnage until January. The Eastern Steel Co., Pottsville, Pa., will hold up shipments on yard steel until Dec. 20, according to present schedules.

Philadelphia, Dec. 14.—Iron and steel scrap continues to reflect an easy tone, the result of continued slack buying and large stocks.

Buffalo, Dec. 14.—No major inquiry for scrap is reported in this district. Some shipments are being taken on old orders but material moving to consumers continue relatively small. Prices are nominally a little lower, although dealers look for an upward turn on the first tonnage buying. Consumers of heavy melting steel have resumed taking shipments but in small quantities and new offers are lower than the basis of last sales.

Pittsburgh, Dec. 14.—Since a West Virginia user purchased about 20,000 tons of scrap, paying for the heavy melting steel $16.75 with price gradations under that for other grades at the usual differentials, the scrap market has again become quiet. Some mills are operating on a 50 per cent basis and consumption has slowed considerably, causing them to hold up shipments on scrap orders placed some time ago.

St. Louis, Dec. 14.—Continued quiet features the market for iron and steel scrap. Buying by consumers is on a hand-to-mouth basis, and total purchases make moderate showing. Trading between dealers is small as they have few orders to fill and are not disposed to speculate.

Cleveland, Dec. 14.—Lack of interest by consumers holds the iron and steel scrap market inactive here, with prices largely nominal. Expected buying to fill in for immediate requirements has been small.

Birmingham, Ala., Dec. 14.—No change in iron and steel scrap is reported, much old material still moving, buying slow, quotations low and undecided and consumption steady. Heavy melting steel predominates in the tonnage moving though cast is also being called for.

Cincinnati, Dec. 14.—With inventory time at hand the movement of iron and steel scrap here is virtually at a standstill. Consumers are not interested in offerings, and dealers have reduced buying prices 50 cents. Mills in this territory have sufficient supplies to carry them into the new year. Offerings of producers are small.

Sheets

Market in Better Position—Consumers Showing More Interest Prices Unchanged

MORE releases of tonnage for this quarter, particularly for the automobile industry, and additional buying for first quarter have revived the tone of the sheet market. Some large consumers have indicated they will want usual quantities for first quarter. Car builders are expected to be important buyers. November output of galvanized sheets was the best in ten years.

SHEET PRICES, PAGE 1568

Youngstown, O., Dec. 14.—Some encouragement is taken by leading sheetmakers in this district because regular customers indicate they will need the usual quantities of sheet and strip in the first quarter. Some users who have placed first quarter contracts now wire for prompt shipments and further ask for shipping schedules for January. Other consumers appear indifferent. Mills this week are operating in general at about the same rate as last week. Two small mills are down, whereas larger works have put on more mills. This week is expected to mark the bottom of the buying slump.

Quotations show no sign of change. No. 24 gage black ranges from 3.00c to 3.10c, with most makers holding to the latter figure; and galvanized 3.85c to 3.95c, the latter being the usual quotation. Full-finished hold to 4.25c.

Boston, Dec. 14.—Sheet specifications improved slightly in the past week and contracts for first quarter are being entered in volume fully as heavy as for the fourth. Prices are unchanged, with galvanized firm at 3.95c, Pittsburgh.

New York, Dec. 14.—The Wheeling Steel Corp. has booked 410 tons of blue annealed sheets from the Lockjoint Pipe Co., Ampere, N. J., for use in a concrete pipe line to be constructed in the borough of Queens, New York.

Pittsburgh, Dec. 14.—With more releases coming through on this quarter's business, and additional purchases for future shipment, sheetmakers are pleased with market trends. All are expecting much better conditions after the first of the year. While large tonnages are not involved, the fact that releases are being received almost every day from body builders and other parts makers and automobile companies is considered more important than new buying for the reason that sheet producers have sheet bars on hand for specific requirements and are anxious to get them rolled. November output of galvanized sheets for certain makers was the largest in any similar period in 10 years. Large quantities were made for export. A large volume of sheet business is expected from car builders early in 1927. Present programs include many all-steel box cars and each car requires about 3¼ tons of sheets. Operations of the leading interests exceeded 76 per cent last week; others are on a 70 per cent

basis, and a few are lower. Seventy to 75 per cent is the general average. The price situation is practically unchanged, some competitive levels of about $2 under what are considered regular market prices being encountered from small makers.

Philadelphia, Dec. 14.—An easier tendency is noted in the market for sheets. Although the higher prices continue to be done on a fair percentage of the business, the larger portion of current bookings are at 2.30c, Pittsburgh, for blue annealed; 3.00c for black, and 3.85c for galvanized for first quarter.

Cleveland, Dec. 14.—Despite the fact that sheet demand has been good in the past seven weeks, prices continue to increase in variableness. Although the open price of most sellers on black sheets is 3.10c, Pittsburgh, the common market is 3.00c and as low as 2.85c, Pittsburgh, was reported on a single carload of one gage. Galvanized sheets are quoted 3.85c to 3.95c, Pittsburgh, and blue annealed 2.30c to 2.40c, with the minimums the common levels. Autobody sheets alone remain firm, 4.25c, Pittsburgh, not being shaded to any extent. Several heavy first quarter commitments have been made by consumers in this district, but the buying movement has not gained much strength.

Chicago, Dec. 14.—Specifications for heavier gages of sheets have declined. Bookings are at least 30 days ahead on black sheets and about three weeks ahead on the heavier gages of galvanized and blue annealed. Forward buying of sheets is inactive for all grades. Sheet mill operations in the district probably are at an average of 75 to 80 per cent. Chicago mills are meeting keen competition in the Southwest from Birmingham sheet producers, who enjoy a slight freight differential. It is understand Birmingham has been offering sheets by rail in this teritory at a price equivalent to that of Chicago mills.

St. Louis, Dec. 14.—Sheet demand continues to recede. Producers and distributors say the drop has been too sudden and marked to be accounted for wholly by seasonal factors. The leading local producer has curtailed activities slightly, and reports further reduction in unfilled orders. Prices are easier.

Tin Plate

Making Long Run At 100 Per Cent—Shipments Heavy

TIN PLATE PRICES, PAGE 1568

Pittsburgh, Dec. 14.—Tin plate business could hardly be better. The American Sheet & Tin Plate Co. for instance, has operated at 100 per cent since Dec. 1, at all of its 13 plants, and the present week started at the same scheduled rate. This is the longest continuous full run in the recollection of anybody connected with the institution. About 95 per cent is the general average for the industry in this locality. Shipments for domestic use are heavy, as are exports. Higher prices are being obtained in the export market, and the openly quoted domestic level is unchanged at $5.50.

New York, Dec. 14.—The 55,000 boxes of tin plate recently distributed by the Nippon Oil Co. of Japan has been placed with American mills through three large Japanese merchant firms. The Kyoto Oil Co. requirements are expected to be placed in the next few days.

Demonstrates Lift Truck

Many sheet steel executives attended the demonstration of an unloading machine at the plant of the Hudson Motor Car Co., Detroit. Dec. 14. The machine, which is an electric truck equipped with a lifting device, was developed by the Hudson company and handles 10 tons of sheets in a single lift. Its use in unloading high-grade sheets as received at the plant in box cars has effected a drastic saving. Considerable interest in the device is being manifested by railway officials.

Imports Are Light

Philadelphia, Dec. 14.—Imports of iron and steel and related commodities at this port were unusually small in week ending Dec. 11. comprising 343 tons of structural steel and 5 tons of strip steel, all from Belgium.

Urges Steel Cars Only

Washington, Dec. 14.—Congress should by law require all railroads to use steel or steel underframe cars in passenger service and forbid the inclusion of wooden-frame cars in trains consisting in part of steel cars, the interstate commerce commission recommends in its annual report.

Crucible steel first was made on a commercial scale in this country at Cincinnati in 1832.

Pipe

1927 Programs Being Formed But Present Buying Continues Light—Pipe Prices Weaker

TUBULAR products mills continue to operate around 90 per cent of capacity but shipments exceed orders and backlogs are being dissipated. Large line pipe projects for 1927 maturity are being contemplated but present sales continue spotty. Cast pipe prices have weakened, dropping $2 a ton at Birmingham. Detroit is in the market for 3180 tons.

PIPE PRICES, PAGE 1568 AND 1606

Pittsburgh, Dec. 14.—Miscellaneous pipe business has lost some of the vigor of recent months, but prospective business looms up importantly. Gas and oil companies are manifesting concern about obtaining deliveries when wanted. So many projects are in contemplation that 1927 already promises to equal if it does not exceed 1926 as a line pipe producing, shipping and consuming year. Amarillo Gas Co., Amarillo, Tex., wants 100 miles of 16-inch, and many other large inquiries are tentatively mentioned. A recent visit to this territory of the purchasing agent in charge of placing orders for the 100,000 tons or more required for the 20-inch line from the Amarillo field to Denver leads some in the trade to believe that arrangements were practically completed with two large makers producing this size. Pipe mills are operating on an average of about 90 per cent, so that with high shipping rates backlogs are being dissipated. Miscellaneous orders are fairly plentiful. Standard full weight merchant pipe is quiet and probably will continue so until late in January.

Boston, Dec. 14.—Recent pipe sales have been few in New England, but prospects for 1927 tonnage are excellent. One of the gas companies will soon take bids for 6000 tons. Prices on small sizes are firm. On large sizes concessions up to $2 a ton are being made from the base price which figures $54.10 a ton, delivered.

New York, Dec. 14.—Seasonal dullness continues to dominate cast pipe. Municipal demand is practically at a standstill and while considerable private inquiry is rumored, this has failed to develop as yet.

Chicago, Dec. 14.—Unfilled orders for cast iron pipe are declining steadily. Winter work is slow in developing, the present activity in the market being the wind-up of the year's work. For Detroit, 3180 tons of 8-inch pipe is pending, and Minneapolis will open bids Dec. 16 for 1700 tons of 6 to 24-inch pipe. Prices are irregular, with evidences of weakness. For 6-inch pipe and over, $39 to $40, Birmingham, is being quoted.

Birmingham, Ala., Dec. 14.—Drastic reductions in cast iron pressure pipe quotations were announced the past week, $37 to $38 on 6-inch and over sizes as base being the new price. Production continues steady. Winter buying is showing a little activity but is not up to expectations. Reports are that the holiday cessation of operations will be of but one week duration. Soil pipe and fittings demand showed slight improvement and

several of the larger shops have been working overtime.

CONTRACTS PLACED

696 tons, 12 and 16-inch class C pipe, Los Angeles, Spec. 798-C and D, to B. Nicoll & Co. for French pipe.
613 tons, 24-inch class B pipe, Los Angeles, Spec. 798-C, to American Cast Iron Pipe Co.
583 tons, 24-inch class B pipe, Los Angeles, Spec. 798-C, to Grinnell Co. for Belgian pipe.
400 tons, 6 to 24-inch by Manchester, N. H., to Warren Foundry & Machine Co.
178 tons, 16-inch class D, Seattle, to B. Nicoll & Co.
108 tons, 4 and 6-inch class B, San Diego, Calif., to B. Nicoll & Co.

CONTRACTS PENDING

3180 tons, 8-inch pipe for Detroit; pending.
1975 tons, 4 to 24-inch class B pipe, Sacramento, Calif.; National Cast Iron Pipe Co. low bidder.
1747 tons, 12 and 24-inch Class B and C, Los Angeles, Spec. 798-C; B. Nicoll & Co. low bidder.
1700 tons, 6, 8, 12 and 24-inch pipe for Minneapolis; bids in Dec. 16.
1118 tons, 8 to 20-inch class B and D, Glendale, Calif.; bids in Dec. 16.
700 tons, 12-inch pipe for Macomb, Ill.; bids open Dec. 28.
600 tons, 6 to 24-inch pipe for Pawtucket, R. I.; bids in.
542 tons, 6 and 12-inch class B, Spokane; bids in Dec. 16.
533 tons, 29-inch, Seattle; bids soon.
146 tons, 16-inch class C, Loss Angeles, Spec. 798-D B. Nicoll & Co. low bidder.

Iron Ore

Stocks at Lower Lake Ports Below Last Year's

Cleveland, Dec. 14.—Lake Superior iron ore stocks at Lake Erie ports Dec. 1 were nearly 200,000 tons under the amount a year before, one indication of early demand next year. Stocks at lower lake ports and at furnaces are likely to be below normal May 1. The Lake Superior Iron Ore association reports receipts at Lake Erie ports and balances on dock as of Dec. 1:

	Receipts for Nov.	Season to Dec. 1	Dock balance Dec. 1
Buffalo	370,256	4,209,214	18,525
Erie	140,149	1,044,086	87,248
Conneaut	638,833	9,514,669	2,107,130
Ashtabula	554,615	9,193,685	2,731,492
Fairport	172,619	2,136,800	471,686
Cleveland	919,033	9,551,686	1,236,446
Lorain	333,687	3,784,217	319,040
Huron	35,665	1,191,353	606,897
Toledo	117,413	1,544,989	84,336
Totals	3,282,270	42,170,699	7,662,800
One year previous	3,197,579	38,596,823	7,856,154

Receipts at other than Lake Erie ports in November totaled 1,548,818 tons, and for the season to Dec. 1 amounted to 15,626,988 tons.

The market is featureless, requirements being covered.

A petition in bankruptcy has been filed against the Simplex Metal Spinning & Stamping Co., Inc., 97-103 East Houston street, New York, N. Y.

Bars

Practically All Users Refrain from Forward Commitments—Prompt Deliveries Being Made

SPECIFICATIONS received by Chicago mills tend to become lighter. Competition in Southwest is having effect upon prices. Bar sales at Chicago are up to average. Contracting at Buffalo is fair. Production in Mahoning valley is a shade better. Present prices generally being reaffirmed for first quarter. Rail steel and bar iron hold.

BAR PRICES, PAGE 1568

Chicago, Dec. 14.—Specifications for finished steel are failing to attain the mark set by producers for December, and aside from the cheerful outlook in railroad equipment quarters for the early months of next year nothing is in sight to flavor the dullness of the current market. Specifications for soft steel bars are easing gradually and mills find no difficulty in making prompt shipments. By rotating bar rolling schedules, spot tonnages seeping into the market can be handled without difficulty. While farm implement makers are buying sparingly for first quarter, most forward buying is withheld in all lines of finished steel. Mills of the leading interest this year passed the 1925 ingot production total shortly after the middle of November.

Rail steel bar mills in the Chicago district are busy on pending obligations, chiefly for reinforcing bars and fence posts. Jobbers are replenishing depleted stocks of the latter for the early spring trade. While bar iron producers have no backlogs, current business keeps operations fairly regular. The 9-inch mill of the Republic Rolling Mill Corp. will be down again shortly for a few days' repair work at the plant.

Soft steel bars are quoted at 2.10c, Chicago, for first quarter business. Competition in southwestern territory is reported bringing out lower quotations for some lines of finished steel. For bar iron, 2.10c is being obtained on small lots, but most sales are at 2.00c.

Boston, Dec. 14.—Bar sales exceeded 2500 tons at Boston in the past week, which is about the year's average. The price with one exception is firm at 2.00c, Pittsburgh, or 2.365c, delivered.

Buffalo, Dec. 14.—First quarter bar specifications are somewhat larger but new contracts have not been made on a broad scale. Steelworks quote 2.265c as their minimum price for first quarter shipment. Mill operation in the district has been cut to about 60 per cent both in bar and other department as an average.

Youngstown, Dec. 14.—A little more interest appears manifest in the steel bar trade, sufficient new purchases having been received to warrant a few more mills being active this week. Large consumers, however, have not come forward as yet with next year's requirements even on reaffirmation by one leading maker of this quarter's prices for the first quarter of 1927, 2.10c for small lots and 2.00c for important tonnages.

Philadelphia, Dec. 14.—Steel bar demand continues to let down, but the price appears firm at 2.00c, Pittsburgh, with small sales noted at 2.10c.

Pittsburgh, Dec. 14.—Slightly accelerated activity is noted in connection with merchant steel bars. As yet tonnages are not large in the orders coming through, but apparently will grow as the end of the year approaches since good schedules are expected among consumers generally, particularly cold bar finishers for January. Contracts signed up for first quarter carry 2.00c. Tonnage unspecified by Dec. 31 may be cancelled and new arrangements entered into.

Refined iron bar demand is confined to small orders for immediate needs of users. Prices occasionally are subjected to some slight shading such as 2.90c against the regular quoted market of 3.00c.

Cleveland, Dec. 14.—Some users of soft steel bars have cut their cloth too short and, while already covered for first quarter, have been compelled to order material to carry them through this month. As a whole, improvement is noted in the automotive industry but it is spotty, General Motors units and Chrysler leading in activity. Considerable material will be in transit the last few days of December as many users will need bars Jan. 3. Soft steel bars range from 2.00c to 2.19c, delivered, the former being the local mill price.

Hoops and Bands

Larger Orders Being Received And Prospective Buying Is Good

HOOP PRICES, PAGE 1568

Pittsburgh, Dec. 14.—More orders for hoop and band sizes of hot rolled flats came through last week, compared with the week preceding. More releases are promised between now and the end of the year, and in the interval additional contracting will be done for first quarter. Most releases and prospective buying are automotive. Other consuming lines are ordering sparingly. The price is firm at 2.50c.

Structural Shapes

Return of Large Tonnage Projects to Activity Causes Market to Renew Life—New York Again Dominant

FEATURED by the return of large tonnage projects to activity, the structural shape market has snapped back to life. New York again dominates with approximately 30,000 tons awarded and unusually heavy inquiries. New York Central railroad's inquiry of 40,000 tons for a proposed office building is the largest individual tonnage to be brought out for many months. New York subway work this past week accounted for 11,500 tons, a hotel in New York for 6100 tons, railroad bridgework in Ohio 9400 tons, an industrial building in Lyman, Nebr., 7500 tons, and a building in Providence, R. I., 6000 tons. Small work has fallen off, however, most current business being for delivery in the first quarter of 1927. Awards are largest of any week in two years.

STRUCTURAL SHAPE PRICES, PAGE 1568

New York, Dec. 14.—Although structural orders are not as numerous as last week, a substantial tonnage is being placed in this district. Among the larger contracts are 11,500 tons for subway work and 6100 tons for a hotel. Despite the advanced season, inquiries are in good volume and include several of 1000 tons and over. Shape prices continue around 1.90c to 2.00c, Pittsburgh, with some occasional concessions.

According to figures just compiled by the New York Structural Board of Trade, structural bookings in November for the metropolitan district aggregated 26,609 tons, compared with 30,760 tons in October. This is exclusive of such work as bridges, piers and subway construction, and brings the total for the first 11 months up to 348,962 tons. In the first quarter, according to the board, 72,343 tons were placed; in the second, 113,492 tons; and in the third, 105,759 tons. In the first two months of the present quarter only 57,269 tons were placed.

Philadelphia, Dec. 14.—Eastern shape mills now are operating at an average of 50 to 60 per cent. Current buying consists of a large number of individual orders involving but a rather small total.

Pittsburgh, Dec. 14.—Contracting for first quarter needs in structural shapes lags somewhat. While a number are preparing to sign up between now and the holidays, there is no immediate pressure since prices will probably remain on a 2.00c basis. Awards this past week have not been numerous and those made involve relatively small tonnages. Some attractive inquiries are up.

Cleveland, Dec. 14.—Award of 9400 tons of structural steel for bridge work by the Chesapeake & Hocking system features an otherwise dull market. Pending work is more active, but large projects remain few. Plain material prices are steady at 2.19c, Pittsburgh, or 2.00c, Cleveland. First quarter contracting is lagging, although several large consumers have made their commitments.

Cincinnati, Dec. 14.—Activity in the structural market was on a comparatively small scale the past week. Awards involved 50 to 100-ton lots. No action has been taken on the 3000 tons required for the annex of the Union Central building. Louisville & Nashville railroad is inquiring for 500 tons for bridge work. The plain material price is 1.90c, Pittsburgh.

Boston, Dec. 14.—Awards of the past week have been mostly below 100 tons, but the total exceeds that of any previous week since the first of November. McClintic-Marshall Co. took 6000 tons for a 25-story office building in Providence, R. I. Prices hold firm at established levels with the exception of one mill which is offering slight concessions.

Chicago, Dec. 14.—Fabricators are specifying steadily on heavy tonnages of pending business, but inquiries for plain material are falling off. The 12,000 tons for a new building for the State Bank of Chicago still is pending. American Bridge Co. is reported low bidder on 4300 tons for Mississippi river bridge work at Cape Girardeau, Mo. Virginia Bridge & Iron Co. has been awarded 1000 tons for a railroad bridge for the Western Pacific.

St. Louis, Dec. 14.—American Bridge Co. was low bidder for the structural work, involving approximately 4300 tons of steel, on the proposed highway bridge over the Mississippi river at Cape Girardeau, Mo. The contract for the foundation work is to go to the U. G. I. Co., Philadelphia or the Union Bridge Co., Kansas City, according to the W. R. Compton Co., St. Louis, which is financing the project. The aggregate of the lowest bids on foundation and structural work was about $1,250,000.

Awards Compared

	Tons
Awards this week	78,401
Awards last week	30,520
Awards two weeks ago	14,722
Awards this week in 1925	20,405
Average weekly awards, Nov.	27,631
Average weekly awards, 1926	27,877
Total awards to date, 1925	1,659,548
Total awards to date, 1926	1,444,171

CONTRACTS PLACED

11,500 tons, subway section 5, route 101, New York, awarded through Oakdale Contracting Co., to American Bridge Co.

9400 tons, bridgework for Chesapeake & Hocking railroad, connecting Hocking Valley and Cheapeake & Ohio railroads, 4800 tons to Mt. Vernon Bridge Co. and 4600 tons to Bethlehem Steel Co.

7500 tons, building for Western Sugur Refinery Co., Lyman, Nebr., to American Bridge Co.

6100 tons, Lincoln hotel, New York, to Levering & Garrigues Co.

6036 tons, involved in the following seven awards:
- 9-story apartment, 30 West Ninetieth street, New York, to Paterson Bridge Co.
- 16-story apartment, 585 West End avenue, New York, to the Paterson Bridge Co.
- Substructure for Lincoln hotel, New York, to George A. Just Co.
- Theater, Grand avenue and 104th street, Corona, Long Island, N. Y., to George A. Just Co.
- 22-story hotel, 109-123 East Fifty-Sixth street, New York, to Hay Foundry & Iron Works.
- 15-story apartment, 310-16 West 106th street, New York, to Taylor-Fichter Steel Construction Co.
- 22-story loft, Eighth avenue and Thirty-seventh street, New York to Taylor-Fichter Steel Construction Co.

6000 tons, 25-story office building for Industrial Trust Co., Providence, R. I., to McClintic-Marshall Co.

4000 tons, Philadelphia Electric Co. office building, Ninth and Sansom streets, Philadelphia, to American Bridge Co.

3500 tons, Union Central Life Insurance Co. annex, Cincinnati, to McClintic-Marshall Co.

3500 tons, sheet piling, for Buffalo municipal piers, awarded by Monarch Engineering Co., to Bethlehem Steel Co.

2600 tons, involved in the following contracts, all to Hedden Iron Construction Co.:
- Foundation truss for Catherine slip, New York.
- Biology building for Fordham university, New York.
- Building for Bronx hospital, Fulton and 169th streets, New York.
- Apartment, 36 East Seventy-second street, New York.

2300 tons, 20-story loft, 336 Fourth avenue, New York, to Taylor-Fichter Steel Construction Co.

2200 tons, Municipal building, Baltimore, to McClintic-Marshall Co.

2200 tons, power house, Standard Oil Co., Whiting, Ind., reported awarded to American Bridge Co.

1900 tons, bank building for New Haven Trust Co., New Haven, Conn., to Levering & Garrigues Co.

1500 tons, San Diego Trust & Savings Bank, San Diego, Calif., to Virginia Bridge & Iron Co.

1300 tons, Coney Island subway connection, New York, to the McClintic-Marshall Co.

1100 tons, Pennsylvania railroad, Overbrook, Pa., to Bethlehem Steel Co.

1000 tons, railroad bridge for Western Pacific railroad, to Virginia Bridge & Iron Co.

900 tons, power house addition, Williamsport, Md., to Fort Pitt Bridge Works.

500 tons, Chamberlain theater, Pottsville, Pa., to Bethlehem Construction Co.

450 tons, bank and office building, 303 West Forty-second street, New York, to Bethlehem Fabricators Inc.

435 tons, Glencourt Telephone exchange, Oakland, Calif., to California Steel Co.

400 tons, athletic building for Brown university, Providence, R. I., to an unnamed fabricator.

400 tons, Pierce Arrow Motor Co. garage, Boston, to independent fabricator. General contract let to Walter Evatt.

400 tons, Howard university building, Wash-

ington, to Barber & Ross.
350 tons, transmission towers for Appalachian Electric Power Co., Danville, Va., to American Bridge Co.
300 tons, gymnasium for Williams college, Williamstown, Mass., to Eastern Bridge & Structural Co.
225 tons, Pelican theater, Klamath Falls, Oreg., to Minneapolis Steel & Machinery Co.
170 tons, concrete pipe line, Queens, New York, to the Bethlehem Steel Corp. through Lockjoint Pipe Co., Ampere, N. J.; General contractor P. F. Connolly, Long Island City, N. Y.
125 tons, McKinley school, Columbus, O., to International Hoist & Derrick Co., Columbus, O.
110 tons, horses and props for dam work, United States engineers, Huntington, W. Va., to American Bridge Co.
Unstated tonnage, Bloomingdale hospital addition, White Plains, N. Y., to Just Structural Engineering Co.
Unstated tonnage, Masonic temple, Long Beach, Long Island, N. Y.; to Structural Contracting Co.

CONTRACTS PENDING

40,000 tons, 35-story office for New York Central railroad, between Forty-fifth and Forty-sixth streets, along and spanning Park avenue with an arch, New York, specifications expected out shortly; James T. Stewart Co. has been awarded general contract for foundation work.
5000 tons, Schroeder & Koppel loft, 2 Park avenue, New York; pending.
3000 tons, approximately, O'Neil department store, Akron, O.; plans out.
2500 tons, Jewish hospital, Brooklyn, N. Y., bids asked. This project was noted previously as involving an unstated tonnage.
2000 tons, Presbyterian Medical Center unit, New York; previously noted as requiring 500 tons, plans revised. Marc Eidlitz, general contractor.
2000 tons, Sixteenth street viaduct, Milwaukee; bids about Jan. 1. R. E. Stoelting is commissioner of public works.
2000 tons, Paramount theatre, Seattle; bids in.
2000 tons, Meyer Frank garage, Portland, Oreg.; bids received.
2000 tons, Masonic building, Providence, R. I.; bids in.
1800 tons, building for Michigan-California Lumber Co., at Carmen, Calif.; pending.
1500 tons, Chicago & North Western freight depot, Proviso, Ill.; pending.
1300 tons, pulp mill for Longview Fibre Co., Longview, Wash.; pending.
1200 tons, hotel, Hammond, Ind.; pending.
1200 tons, refinery building for Standard Oil Co., Cleveland; bids in.
1100 tons, bridge for Erie railroad, Paterson, N. J.; bids asked.
600 tons, First National Stores Inc. building, Somerville, Mass., to New England Structural Co.
600 tons, theater, Trenton, N. J.; bids asked.
410 tons, store building at Lowell, Mass., to Wiggin & Co., Lowell, Mass.
400 tons, two apartment houses, San Francisco; bids being received.
300 tons, theater, Philadelphia; bids asked.
290 tons, McKinley school auditorium, Honolulu, T. H.; bids Dec. 13.
275 tons, machine shop and sugar mill, Hawaiian Pineapple Co. near Honolulu, T. H.; bids in.
200 tons, hotel, North Attleboro, Mass.; bids in.
170 tons, buildings for Pacific Bone Coal & Fertilizer Co., Bay Shore cut-off, San Francisco; bids being received.
100 tons, Alameda County war memorial, Oakland, Calif.; bids in Dec. 20.
Unstated tonnage, hotel, Whiting, Ind., pending.
Unstated tonnage, filtration plant, Waukegan, Ill.; general bids in Dec. 23.
Unstated tonnage, tuberculosis sanitarium, Chicago; pending.

A joint meeting of the Engineers' Society of Western Pennsylvania and the Pittsburgh section of the American Institute of Electrical Engineers was held Dec. 14, in the chamber of commerce auditorium, Pittsburgh. Dr. W. R. Whitney, director, research laboratory, General Electric Co., Schenectady, N. Y., delivered an interesting illustrated paper on "Research."

Concrete Bars

Dullness More Pronounced as Inquiries and Orders Diminish in Number and Tonnage

DECLINING activity in the concrete reinforcing bar market is becoming more pronounced as the year-end approaches. Some 1927 requirements are being covered, but current sales are sluggish. December sales are falling behind those of that month in 1925. Several large inquiries are pending but action on closing continually is deferred.

REINFORCING BAR PRICES, PAGE 1568

Chicago, Dec. 14.—Winter dullness has developed in reinforcing bars. Several warehouses have important projects pending, but fresh activity is declining. The wave of apartment house building in Chicago is subsiding, and reports are that speculative building this winter will diminish. Billet bars are weak, the price range being 2.25c to 2.60c.

Buffalo, Dec. 14.—Reinforcing bar demand has dropped close to the vanishing point except for old inquiry which has not been covered. December sales are running behind those of the same month of last year. New inquiry of the past ten days has not included one lot of as much as 100 tons. Mill operation has been reduced to meet the situation.

Pittsburgh, Dec. 14.—Only one of the larger jobs involving concrete bars has been let; the others have been held over. This is the building for the Republic Bank Note Co. here. A local project which will take more than 1000 tons still is in its preliminary stages and not identified. The current market on concrete bars still is quoted at 2.00c.

Cincinnati, Dec. 14.—Movement of reinforcing bars continues on a small scale, as winter approaches and building operations decline. Several projects are pending involving large tonnages, but they probably will not be awarded until after Jan. 1. Prices are unchanged with the Pollak Steel Co. quoting 1.90c base Marion on rail steel bars and soft steel bars holding at 2.00c Pittsburgh.

Cleveland, Dec. 14.—Small lots continue to dominate this concrete bar market. Orders taking more than 100 tons each are scarce. On small lots 2.19c, Cleveland, continues the market, but reports of competition on some business down to 1.90c, Cleveland, are heard. Some sellers claim this is on off grade steel or bars rolled from rejects. Rail steel is unchanged at 1.80c, mill.

Awards Compared

	Tons
Awards this week	3,415
Awards last week	2,595
Awards two weeks ago	5,890
Awards this week in 1925	4,670
Average weekly awards, Nov.	6,208
Average weekly awards, 1926	6,386
Total awards to date, 1925	299,255
Total awards to date, 1926	316,180

CONTRACTS PLACED

580 tons, Lucy Flower school, Chicago, to Joseph T. Ryerson & Son Inc.
425 tons, concrete pipe line, Queens, N. Y., to Donner Steel Co. through Lockjoint Pipe Co., Ampere, N. J.; general contractor P. F. Connolly, Long Island City, N. Y.
300 tons, Tasty Baking Co. building, Philadelphia, previously reported to Penn Steel Service, finally allocated 100 tons to Penn Steel Service and 200 tons to McClintic-Marshall Co.
230 tons, school L and Luzerne streets, Philadelphia, to American Steel Engineering Co.
225 tons, apartment hotel, Chicago, to Barton Spiderweb System.
200 tons, building for Republic Bank Note Co., Pittsburgh, to Kalman Steel Co., through Rust Engineering Co., general contractor.
200 tons, sewer at Corona, Long Island, N. Y., to Concrete Steel Co. Contractor, Mucinni & Decker.
200 tons, apartment, Twenty-third and Walnut streets, Philadelphia, to Truscon Steel Co.
190 tons, Philadelphia Electric Co. office building, Ninth and Sansom streets, Philadelphia, to Kalman Steel Co.
170 tons, New Jersey state highway, route 12, section 9, to Igoe Bros.
150 tons, State Bank of Chicago, Chicago, to Concrete Steel Co.
125 tons, sewer, East Cleveland, O., to Bourne-Fuller Co.
120 tons, apartment, Lakeview avenue, Chicago, to American System of Reinforcing.
100 tons, Neptune Fireproof Warehouse Co. building, New Rochelle, N. Y., to Truscon Steel Co. Contractor, Barney-Ahlers Construction Co.
100 tons, county hospital, Visalia, Calif., to Kyle & Co.
100 tons, Ward Baking Co. building, Baltimore, to McClintic-Marshall Co.
100 tons, Municipal building, Baltimore, to Truscon Steel Co.
100 tons, miscellaneous work including tuberculosis hospital, Pittsburgh, and Wilkinsburg, Pa., school, to Metzger-Richardson Co., Pittsburgh.
100 tons, Scranton Lace Co., building, Scranton Pa., to Jones & Laughlin Steel Corp.

CONTRACTS PENDING

1020 tons, New Jersey state highway bridge and viaduct, Newark, N. J., previously awarded Igoe Bros., again up for award.
250 tons, New York Telephone Co., Paterson, N. J.; pending.
230 tons, Green Lane bridge, Philadelphia; general contract to Seeds & Durham.
200 tons, Philadelphia Motor Garage, Philadelphia; general contract to George Kessler.
200 tons, Wharf, Kalului, T. H.; bids in.
160 tons, Monastery, San Mateo, Calif.; bids received.

Approximately 85 per cent of the steel manufactured in the United States is made in open-hearth furnaces ranging from 100 to 125 tons capacity.

Rails, Cars

Track Accessories Feature Orders and Cars Dominate Inquiries—Locomotives Pending

PLACING of 20,000 to 25,000 tons of track fastenings by the Pennsylvania and two western roads features orders of the past week. Chicago mills still have inquiries for 25,000 to 30,000 tons. Car inquiries include 21,000 definitely out and tentative inquiries for 14,000 additional. December is expected to be best car award month this year.

RAILROAD TRACK MATERIAL PRICES, PAGE 1568

Chicago, Dec. 14.—Track fastenings sales are steady. Specifications on orders placed, as is the case also with rails, are much in advance of the usual early winter business. From 20,000 to 25,000 tons of track accessories were placed the past week by one eastern and two western roads. Inquiry now before Chicago mills totals 25,000 to 30,000 tons. Pennsylvania has placed 4,500,000 pounds of spikes, 1,000,000 tie plates, 835,000 track bolts and 175,000 pairs of angle bars, a part of these fastenings going to western mills. No new rail business has come out, except miscellaneous sales of light rails.

Besides definite inquiries for 21,000 cars, proposals for sufficient others to bring the total inquiries to 35,000 are in the offing. It is understood the Illinois Central will increase its inquiry for 4000 cars by several thousand shortly. Western Maryland is in the market for 1200 cars.

Boston, Dec. 14.—Rail buying still is delayed in New England, but inquiry is active. The Boston & Albany the Eastern Massachusetts Street railway and other roads are inquiring for frog and switch material totaling $40,000 to $50,000.

New York, Dec. 14.—Close to 18,000 freight cars are actively pending, but actual awards over the past week have been restricted to a few small scattered lists. Sellers still believe that this month will be one of the best in 1926. Few are willing to estimate under 10,000 cars to be awarded. Locomotive inquiry is light, but with the numerous substantial lists pending good business is expected to develop shortly.

Pittsburgh, Dec. 14.—Orders keep up surprisingly well for light rails in spite of quieter coal market. Coal mine operators have not slackened their trackage extension preceptibly. The price is firm at $36 in billet rolled light rails. Small spike orders continue fairly active from the coal mining sections.

CAR ORDERS PLACED

Andrews Steel Co., one air dump car, to Koppel Industrial Car Co.
Atlantic Coast Line, 100 ballast cars, to Virginia Bridge & Iron Co.
Chicago & Eastern Illinois, 300 freight cars, to own shops.
Chicago & North Western, 25 caboose underframes, to Bettendorf Co.
Consolidated Rendering Co., Boston, tank car, to General-American Car Co.
Great Northern, 500 freight cars, to own shops.
Inland Collieries Co., 100 mine cars, to Koppel Industrial Car Co.
New York Central, 20 automatic dump cars, to Clark Car Co.
Norfolk & Western, 2000 hopper cars and gondolas, 1000 each to Ralston Steel Car Co. and Virginia Bridge & Iron Co.
Pennsylvania Coal Co., 50 mine car bodies, to American Car & Foundry Co.

LOCOMOTIVE ORDERS PLACED

Government of Alberta, Canada, three 106-ton engines, for passenger and freight service, to Canadian Locomotive Co.
Montreal & Southern Countries railway, one electric locomotive, to Canadian Locomtive Co.
St. Louis & O'Fallon, one locomotive, to Baldwin Locomotive Works.

CAR ORDERS PENDING

Atchison, Topeka & Santa Fe, 150 sulphur cars; bids asked.
Boston & Maine, 500 hopper bottom coal cars; contemplated.
Champlain Refining Co., 100 to 300 tank cars; pending.
Chicago, Aurora & Elgin, 15 motor cars; bids asked.
Chicago, South Shore & South Bend, 10 motor cars and 10 trailers; pending.
Delaware, Lackawanna & Western, 25 ballast cars; bids asked.
New York Central, 25 dining cars; pending.

Unfilled Orders Higher

Unfilled bookings of the United States Steel Corp. as of Nov. 30 again showed an increase amounting to 3,807,447 tons, a gain of 123,786 tons or 3.36 per cent over Oct. 31. The November total was the largest since April, when 3,867,976 tons were reported. Further comparisons follow:

Date	Total	Change, tonnage	Change, per cent	
Nov. 30, 1926	3,807,447	123,786	+ 3.36	+
Oct. 31, 1926	3,683,661	90,152	+ 2.50	+
Sept. 30, 1926	3,593,509	51,174	+ 1.42	+
Aug. 31, 1926	3,542,335	60,187	— 1.67	—
July 31, 1926	3,602,652	124,010	+ 3.56	+
June 30, 1926	3,478,642	170,608	— 4.41	—
May 31, 1926	3,649,250	218,726	— 5.91	—
Apr. 30, 1926	3,867,976	511,959	—13.9	—
Mar. 31, 1926	4,379,935	236,887	— 5.13	—
Feb. 28, 1926	4,616,822	265,917	— 5.7	—
Jan. 31, 1926	4,882,739	150,625	— 3.0	—
Dec. 31, 1925	5,033,364	451,584	+ 9.8	+
Nov. 30, 1925	4,581,780	472,597	+11.5	+
Oct. 31, 1925	4,109,183	391,886	+ 9.5	+
Sept. 30, 1925	3,717,297	204,494	+ 5.8	+
Aug. 31, 1925	3,512,803	26 664	— 0.756	—
July 31, 1925	3,539,467	170,991	— 4.6	—
June 30, 1925	3,710,458	339,342	— 8.3	—
May 31, 1925	4,049,800	396,768	— 8.4	—
Apr. 30, 1925	4,446,568	416,996	— 6.6	—
Mar. 31, 1925	4,863,564	421,207	— 7.0	—
Feb. 28, 1925	5,284,771	247,488	+ 4.8	+
Jan. 31, 1924	5 037,323	220,647	+ 4.58	+
Dec. 31, 1924	4,816,676	784,707	+19.1	+
Nov. 30, 1924	4,031,969	506,699	+14.3	+
Oct. 31, 1924	3,525,270	51,490	+ 1.48	+
Sept. 30, 1924	3,473,780	184,203	+ 5.59	+
Aug. 31, 1924	3,289,577	102,505	+ 3.02	+
July 31, 1924	3,187,072	75,433	— 2.3	—
June 30, 1924	3,262,505	365,584	—11.1	—

Belgian Output Highest

Brussels, Dec.2.—(*European Staff Service*)—All previous records of iron and steel production in Belgium were broken in October when the output of pig iron was 319,590 metric tons, as against 312,880 tons in September and 318,390 tons, the previous high mark reached in August. Oct. 31 the number of furnaces operating in Belgium was 55, the same as Sept. 30.

Output of steel ingots and castings during October was 321,620 metric tons, compared with 312,480 tons in September and 317,860 tons, the preceding high mark reached in August. October output included 313,530 tons of steel ingots, as against 304,790 tons in September, and 8090 tons of steel castings, as against 7690 tons in the previous month.

The tonnage of finished steel produced by Belgian mills during October was 256,130 metric tons, compared with 256,950 tons in September and 257,950 tons which was the preceding high mark reached in August. The following table gives figures for the first ten months of this year as compared with the monthly averages of the three preceding years and 1913, in metric tons.

(Metric tons)

Mon. ave.	Coke	Pig iron	Steel ingots and castings	Finished steel
1913	293,585	207,055	205,550	154,820
1923	348,330	178,995	191,410	161,950
1924	346,650	234,000	238,380	198,115
1925	342,360	211,785	200,880	164,940
1926				
Jan.	321,220	137,790	131,180	106,260
Feb.	347,900	202,400	183,260	153,180
March	434,850	281,260	280,920	240,330
April	431,110	287,890	287,030	228,010
May	433,850	299,630	284,790	240,590
June	434,750	294,750	311,260	256,240
July	453,300	306,590	310,740	256,300
Aug.	455,960	318,390	317,860	257,950
Sept.	423,500	312,880	312,480	256,950
Oct.	417,010	319,590	321,620	256,130

Buy Steel in America

Washington, Dec. 14.—Thirteen per cent of the total importations into the Philippine Islands for 1925 consisted of iron and steel and their manufactures, says the bureau of insular affairs, war department in its annual report to the secretary of war. Of this total 80 per cent came from the United States, 7 from Germany, and 4 from Great Britain.

Headquarters of the Chicago chapter of the American Society for Steel Treating, of which Arthur G. Henry is secretary, now are located at 2104-30 South Fifty-second avenue, Chicago, instead of the former address, 4911 Lincoln avenue. The change was necessitated by the removal of Danly Machine Specialties Inc., machine part manufacturers, to its new Cicero plant. Mr. Henry also is metallurgist of the Danly company.

Wire

Prices Maintain Firmness as Production Held Steady—Mills Operating at 50 Per Cent

WIRE buying for current needs is small but consumers are making arrangements for fair lots for delivery after the first of the year and activity then is assured. Makers are keeping operations at a point that will obviate surplus and prices have not been affected by smaller buying. Some contracting for first quarter is being done.

WIRE PRICES, PAGE 1568

Chicago, Dec. 14.—Buying of wire and wire products is quiet. Operations, which had declined below 50 per cent earlier in the month, are more vigorous and estimated at close to 60 per cent. Prices continue firm in the face of light activity.

Boston, Dec. 14.—Wire sales show slight improvement after a long period of dullness. Contracts for first quarter are being entered along encouraging lines. Several consumers specify heavier tonnage than for fourth quarter. Nails are quiet.

Pittsburgh, Dec. 14.—Pledges from wire products jobbers of orders for mixed carloads of wire nails and for straight carloads of nails as well as for mixed carloads of all kinds of wire products are increasing from week to week. Makers look for real development after Jan. 1 but in the meantime actual orders are scarce. Makers, however, continue to keep operations down in harmony with the slackened buying rate, and base prices are being maintained everywhere. Wire and wire nails plant operations do not average over 50 per cent. Specifications on wire for manufacturing purposes are largely in hand for this quarter and some contracts are being received for next quarter. The base on plain wire is 2.50c and on wire nails 2.65c.

Bolts, Nuts, Rivets

First Quarter Buying Satisfactory—Specifications Are for Prompt

NUT AND BOLT PRICES, PAGE 1568

Chicago, Dec. 14.—First quarter contracting for bolts, nuts and rivets is progressing at a rate satisfactory to producers on the basis of fourth quarter quotations. These prices are declared to be firm. Specifications from jobbers in distinctly agricultural areas are lighter than a year ago. December specifications for bolts, nuts and small rivets are ligher than was indicated early in the month.

Pittsburgh, Dec. 14.—Practically all orders coming to nut-bolt-rivet makers are for shipment this year and some of these are fairly attractive. Only a few are for shipment in January. However, a number of contracts are being signed for first quarter delivery and specifications against these will be filed soon. These are for the usual tonnages since left-overs not specified will be canceled. Buying for shipment this month is by structural shops, railroad shops, and other users but jobbers are buying only enough to maintain stocks. Occasional price cutting is encountered, particularly on rivets.

Cleveland, Dec. 14.—Bolt, nut and rivet makers report fourth quarter contracts being signed at a good rate with prospects bright for active business in the first few months of the new year. Specifications so far this month have been at a better rate than last month. Quotations are steady and unchanged.

Strip Steel

Automotive Buying Gives Active Market in Hot-Rolled

STRIP PRICES, PAGE 1568

Chicago, Dec. 14.—Hot-rolled strip steel is more active, due largely to a spurt in buying by automotive parts makers, particularly firms engaged in making automobile frames and rim parts. Buying for the first ten days of January has been better than it was in all November.

Some easiness in price is reported for hot-rolled strip. For narrower widths 2.50c to 2.60c, Chicago, is being quoted, and for the wider strips 2.50c.

Owing to the irregular price situation in cold-rolled strip, which has gone beyond immediate control, cold-rolled producers say their profits are extremely small, and most business being booked is not attractive. Most of the latter business is on the basis of 3.25c to 3.50c, Pittsburgh.

Pittsburgh, Dec. 14.—Hot strips are fairly active for this time of year. Tonnages are not large because consumption until after Jan. 1 will be on a limited scale. Further contracting activity is noted for first quarter at 2.30c. In cold strips the market still is unclarified, some makers in middle western sections apparently being willing to sacrifice to gather tonnage. Against minimums around 3.00c, large important local makers continue to quote 3.40c to 3.50c. Others however, are naming 3.20c and 3.25c and in some cases the maximum figure applied to small lots. Operations average between 55 to 60 per cent.

Cleveland, Dec. 14.—First quarter inquiries comprise a good portion of present activity in the strip market. Some small spot lots are being sold but bookings for delivery before Jan. 1 are few. Hot strip prices are steady at 2.30c, Pittsburgh, for wide and 2.50c for narrow. Little attempt is being made by consumers to break this level. Cold strip continues variable, with 3.25c, Pittsburgh, being done on much of the attractive tonnage. Prices range from below that figure to 3.40c. Sales into Detroit territory command lower prices due to tonnage involved.

Cold Finished Steel

Bookings Are Growing and Price Holds Firmly at Established Level

Pittsburgh, Dec. 14.—Bookings for first quarter in cold finished bars are growing. Customers in the Detroit area have been slightly more active than other automotive users. Some specifications for shipment over the remainder of this year materialized the past week but operations still are checked to an average of about 50 per cent, so that buying for this quarter cannot be extensive. It is claimed that while considerable 2.30c business is being billed in this quarter on large tonnage arrangements, 2.40c is the only quotation on first quarter requirements.

Refractories

Uneven Ordering and Light Volume of Business Noted

Pittsburgh, Dec. 14.—Reports from refractory makers differ alternate ment week before last noticed a decided slowing down last week, while others report a better buying rate for last week. Nobody is buying more brick than they absolutely need, except for future shipment, counting on increased operations in January. Except among certain makers who have good coke oven backlogs, kiln operations do not average more than 60 per cent in Pennsylvania. Several blast furnace linings recently were bought and more are under inquiry. New construction however, is slow in developing but some attractive projects are slated for early 1927 letting. Prices are fairly firm, $40 to $43 being quoted on first grade fire clay, $43 the general quotation on silica. Chrome brick users have been active in closing up 1927 contracts, a large number being signed up during the past two weeks at $45. The $65 level is firm on magnesite.

A. M. Nipple Mfg. Co., Chicago, has increased its capital from $6000 to $10,000.

Nonferrous Metals

Copper Buying Movement Ended but Price Is Firm—Zinc and Lead Demand Moderate —Good Tin Tonnage Taken by Users

Prices of the Week, Cents a Pound

	Copper									
	Electro delivered	Lake delivered	Casting refinery	Spot Straits Tin, N. Y.	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Dec. 8	13.62½	13.75	13.25	69.25	7.90	7.70	6.97½	26.80	13.75	35.00
Dec. 9	13.62½	13.75	13.25	68.50	7.90	7.70	6.97½	26.80	13.75	35.00
Dec. 10	13.62½	13.75	13.25	68.37½	7.90	7.70	7.00	26.80	13.50	35.00
Dec. 13	13.62½	13.77½	13.25	68.62½	7.90	7.70	7.05	26.80	13.25	35.00
Dec. 14	13.62½	13.75	13.22½	68.75	7.90	7.70	7.05	26.80	12.75	35.00

NEW YORK, Dec. 14.—The nonferrous metals have been more active and firmer during the past week than in some time. A buying movement in copper begun just after the beginning of the month was completed and it was one of the greatest sales periods in recent years, accompanied with a rise of ⅛-cent from the lowest price in a year and a half. Tin, toward the end of last week, also was unusually active. Zinc and lead business was moderate.

Outstanding news of the week consisted of copper and zinc statistics for November. Shipments of both metals were large and in fact the domestic movement of zinc last month was the highest ever made. In both metals domestic deliveries so far this year are slightly larger than in all of 1925. However, stocks of copper have increased while zinc supplies have decreased.

Copper—The market has been firmly established at 13.62½c, Connecticut, and 13.75c, Midwest, for several days, remaining at one level since buying became less active. The increase in output of blister and refined metal last month, resulting in increased stocks of both despite good deliveries, explains in part the recent decline in the market.

Stocks of refined copper at the beginning of December were up about 5000 tons to 73,856 tons, but they were larger early in the year and remain much less than a month's business, shipments last month being 120,699 tons or about average. Export shipments of 46,492 tons were 38.5 per cent of the total, compared with 36 per cent in the first 11 months of this year. Copper sheet and brass producers did better business than the wire industry in November copper shipments show.

Zinc—Prime western zinc has been selling around 7.00c, East St. Louis, but went slightly higher as shipments last month at 56,490 tons were surprisingly large. Of this total 53,319 tons were for domestic buyers, making the 11 months movement 537,710 tons, and all shipments 576,463 tons. Stocks at the beginning of this month were 14,481 tons, a cut of more than 1400 tons in the month to much less than average. Output is unusually high but apparently justified. Sales have been light recently but more interest now is shown in January metal.

Tin—On most days tin has been in a quiet market but last Thursday buying was unusually heavy and that was the first time consumers ventured into next year on any considerable scale. However, supplies have been more liberal lately and the price has responded little. Spot and December went up slightly on Monday while February delivery went up nearly 1 cent, so that the spread in prices is not narrow.

Lead—Prices have been steady since the cut of a week ago and buying has been light except that there have been some bright spots in buying on the East St. Louis basis. The trend of prices still depends largely on London fluctuations although the market here appears sound with demand mostly for prompt metal.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	18.62½
Copper, hot rolled	22.25
Zinc, (100-pound base)	11.50
Lead full sheets (cut ¼c more)	11.75 to 12.25
Aluminum, bright flat, up to 10 gage	36.50
SEAMLESS TUBES	
High brass	23.50
Copper	24.25
RODS	
High brass (round ⅝ to 2½-inch)	16.37½
Naval brass	19.12½
WIRE	
Copper, small lots	15.62½
High brass	19.12½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	8.50 to 9.00
Chicago	8.75 to 9.00
Cleveland	8.75 to 9.00
HEAVY YELLOW BRASS	
Chicago	7.25 to 7.50
Cleveland	7.25 to 7.50
ZINC	
New York	4.25
Cleveland	4.25 to 4.50
HEAVY COPPER AND WIRE	
New York	10.87½ to 11.12½
Boston	10.50 to 11.00
Chicago	10.00 to 10.75
Cleveland	10.50 to 10.75
RED BRASS BORINGS	
New York	7.75 to 8.00
YELLOW BRASS TUBING	
Cleveland	6.50 to 6.75
LIGHT COPPER	
New York	8.75 to 9.00
Chicago	9.00 to 9.25
Cleveland	9.50 to 9.75
LIGHT BRASS	
Boston	6.00 to 6.50
Chicago	6.25 to 6.50
Cleveland	5.50 to 5.75
ALUMINUM	
Clippings, Cleveland	19.00 to 20.00
Borings, Cleveland	11.50 to 12.00
Cast, Cleveland	15.50 to 16.50
Cast, Boston	17.00 to 17.50

Secondary Metals

Remelt aluminum No. 12	21.50 to 22.00
Brass ingot, 85-5-5-5	11.62½ to 11.75

Coke By-Products

Sulphate of Ammonia for Export Displays More Strength

New York, Dec. 14.—Better inquiry is resulting in higher export prices of sulphate of ammonia. The market may now be quoted at $2.35 to $2.60, port, for material in double bags, and it would not prove surprising to many in the trade if a higher range would develop shortly. Reflected in the more active inquiry is, of course, the situation in England, which resulted from the coal strike. Domestic prices are unchanged at $2.45 to $2.50, delivered. While demand is spotty, production is easing off, following less activity in the iron and steel industry and commitments against long term contracts entered into last summer are sufficient to keep any large surplus from accumulating.

Distillates are steady with demand, particularly from paint and lacquer manufacturers, well maintained. Pure and 90 per cent benzols are holding at 24 cents, works, per gallon for material in tank car lots and 29 cents in drums with the tendency easier; toluol and solvent naphtha, 35 cents, works, in tanks and 40 cents in drums; and commercial xylol, 36 cents in tanks and 41 cents in drums.

Naphthalene is undergoing seasonal dullness with prices on flakes easy at 5 to 7 cents, works, and balls at 6 to 8 cents. Phenol is featureless and unchanged.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contract
Pure benzol	$0.24	.....
90 per cent benzol	0.24	.....
Toluol	0.35	.....
Solvent naphtha	0.35	(nominal)
Commercial xylol	0.36	(nominal)
Phenol	0.22	0.22

Per Pound at Producers' Plants

Naphthalene flakes	0.05 to 0.07
Naphthalene balls	0.06 to 0.08

Per 100 Pounds Delivered

Sulphate of ammonia	2.47½	.....

Warehouse

Holidays and Inventory Period Becoming More of a Factor in Declining Business—Prices Holding Unchanged

THE usual decline in iron and steel warehouse trade preceding holidays and inventories is more noticeable, although several sellers claim small fill-in buying of consumers is maintaining sales at a good rate. Prices continue on an even keel, with changes exceptional.

Jobbing demand in the New York metropolitan district continues to diminish as expected at this season. Structurals, which have been active are moving the slowest in a long time. Reinforcing bars also are dull. Sheets, particularly galvanized and blue annealed, are moving fairly good.

Warehouse sales of iron and steel at Buffalo are declining as the holiday season approaches with prospect that they will be of unusually small proportions by this week end. December business has been of about average proportions.

Warehouse price schedules are unchanged in the Pittsburgh area with demand down a trifle from the October-November rate. Demand is practically unchanged but sellers expect a general drop in the purchasing rate. Galvanized sheet orders of attractive size are still being received.

Demand for warehouse products in the Cincinnati district has been on the decline since Dec. 1. The falling off has been confined largely to sheets, cold rolled products and plates. Structurals and reinforcing bars have been holding up fairly well, but the movement is nothing out of the ordinary for this season.

St. Louis warehouse demand is beginning to feel the effects of the coming holidays and inventory period. There has been a general letting down in buying by all classifications of consumers, though the recession is no greater than usual at this time of year.

Supplies for the coal mines are much more active than at this time last year or in 1924, one interest reporting sales of such material during November and early December the largest in more than four years.

Continued recession is noted in Detroit demand for warehouse products. Some demand exists for bars and structural products but other stocks are weak. The decline is considered

(*Concluded on Page* 1583)

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.15c
Ft. Worth	3.75c
Los Angeles	3.30c
New York	3.24c
Philadelphia	2.90c to 3.20c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.30c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.80c to 4.06c

IRON BARS

Boston	3.265
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
Ft. Worth	3.75c
New York	3.24c
Philadelphia	2.90c to 3.20c
St. Louis	3.15c
Tulsa	3.80c to 4.06c

REINFORCING BARS

Boston	3.265 to 3.50c
Buffalo	3.30c
Chicago, billet	2.25c to 2.60c
Chicago rail steel	2.00c
Cincinnati	3.20c to 3.30c
Cleveland	2.50c to 3.00c
Detroit	3.15c
Ft. Worth	3.75c
Los Angeles, C.L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	3.15c
Philadelphia	3.00c to 3.15c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	2.30c
San Francisco, L C. L.	2.45c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.50c to 2.60c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.25c
Ft. Worth	4.50c
Los Angeles	3.20c
New York	3.34c
Philadelphia	2.75c to 3.20c
Pittsburgh	3.00c
Portland	3.10c
San Francisco	3.30c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.80c to 4.16c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.00c
Cleveland, 3/16-inch	3.225c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Ft. Worth	4.50c
Los Angeles	3.20c
New York (sheared and universal)	3.34c
New York (floor)	5.25c
Philadelphia	2.75c to 3.20c
Philadelphia, 3/16-inch	2.95c to 3.40c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.80c to 4.16c

NO. 10 BLUE ANNEALED SHEETS

Boston 3/16-inch	3.915c
Buffalo	3.80c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.65c
Los Angeles	4.00c
New York	3.89c
Portland	4.25c
Philadelphia	3.50c
Pittsburgh	3.40c
San Francisco	4.00c
Seattle	4.25c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.05c to 4.25c

NO. 24 BLACK SHEETS

Boston	5.10c
Buffalo	4.30c
Chicago	3.95c
Cincinnati	4.05c
Cleveland	3.80c
Detroit	4.10c
Ft. Worth	4.70c
Los Angeles	5.00c
New York	4.35c
Philadelphia	4.35c
Pittsburgh	3.95c
Portland	4.90c
San Francisco	4.90c
Seattle	4.90c
St. Louis	4.45c
St. Paul	4.20c
Tulsa, No. 28	5.00c

NO. 24 GALVANIZED SHEETS

Boston	5.80c
Buffalo	5.15c
Chicago	4.80c
Cincinnati	4.90c
Cleveland	4.65c
Detroit	5.05c
Ft. Worth	5.90c
Los Angeles	5.75c
New York	5.10c
Philadelphia	5.30c
Pittsburgh	4.80c
Portland	5.75c
San Francisco	5.65c
Seattle	5.75c
St. Louis	5.25c
St. Paul	5.15c
Tulsa, No. 28	6.00 to 6.31c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.80c
Ft. Worth	4.40c
Los Angeles	4.05c
New York	3.99c
Philadelphia	3.75c to 3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.00c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.65c
Detroit	4.30c
New York	4.49c
Philadelphia	4.00c to 4.25c
Pittsburgh	4.50c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	4.05c	4.55c
Buffalo	3.90c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.90c	4.40c
Detroit	3.85c	4.35c
Los Angeles	5.25c*	———
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	———
San Francisco	4.25c*	———
Seattle	5.00c*	———
St. Paul	3.85c	———
Tulsa	4.66c	5.16c

*Rounds only.

COLD ROLLED STRIP

Boston, 0.100 inch, 500 lbs. lots	6.15c
Buffalo	6.25c
Chicago	6.25c
Cincinnati	7.15c
Cleveland, over 500 lbs. lots	5.95c
Detroit	6.20c
New York	6.25c
Philadelphia	6.25c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL

New York duty paid

Swedish, hollow drill steel	15.00c
Swedish iron bars round	6.25c
Flats and squares	6.50c

WELDED PIPE

Discounts from warehouse, New York City Standard Steel Pipe

WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—28	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6-inch lap	—48	—33
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
⅛ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	— 1	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 6
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 3	+16

Quiet Week on Coast

Cast Iron Pipe Most Active and Other Business Is Small Tonnages—Much Is Pending

SAN FRANCISCO, Dec. 11.—(*By Air Mail*)—With the exception of the movement of cast iron pipe, activity in the coast markets during the past week has been limited to small unimportant lots. While a large number of structural projects are ready for release it is thought that few of them will be closed until after the first of the year. The approach of the holiday season and the inventory taking period is the biggest contributing factor to the present lull.

Pig Iron and Coke

No improvement is noted in demand for pig iron and sales and inquiries have been confined to small lots. The Provo furnace of the Columbia Steel Corp. reports a fair volume of business composed of small lots for immediate shipment. One importer has approximately 1000 tons of India iron enroute, 500 tons of which is scheduled for Los Angeles and the remainder for San Francisco. Importers are not quoting on German coke for future shipments, due to the European situation. Prices on pig iron are unchanged.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah Foundry	25.00 to 26.00
*German	24.25
*Indian	25.00
*Dutch	22.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Demand for merchant bar steel is low and local producers are operating on slender schedules. Little improvement is looked for until after the first of the year. Small lot buying constitutes the only activity in concrete reinforcing bars. Mill men are interested in the award of the Coolidge dam project at San Carlos, Ariz., to Atkinson-Spicer Co., Los Angeles, in which 2250 tons are involved. The steel for this project has not yet been placed. This is one of the biggest inquiries of the year. Pending business exceeds 5500 tons. Prices on out-of-stock material continue, in the bay district, at 2.30c to 2.45c.

No awards of importance were noted this week in plates. Pending business aggregates well over 12,000 tons. Bids were opened this week on 900 tons for a pipe-line for the East Bay Water Co., Oakland, and on 375 tons for the Rockridge siphon of the East Bay municipal utility district, Oakland, but no awards have been made. The Shell Oil Co. will receive bids Dec. 21 for nine 45,000-barrel tanks involving 1800 tons. No action has been taken on the Associated Oil Co.'s inquiry for 930 tons for three 80,000-barrel tanks. Bids will be opened next week for 3000 tons for the Yakima, Wash., pipe line project. Prices are firm at 2.30c c.i.f. as the minimum.

Movement of structural material this week was by no means large and awards involved lots of less than 100 tons. While considerable work is in sight it is thought many of the larger projects will be put over until after the first of the year. New inquiries of the week include two apartments in San Francisco, each calling for 200 tons and a war memorial building in Oakland involving 100 tons. Pending business totals over 20,000 tons with over 10,000 tons more in the offing. Atkinson-Spicer Co., Los Angeles, was awarded the Coolidge dam project in Arizona calling for 700 tons of structural material. Prices are firm at 2.35c c.i.f.

Other Finished Material

The United States Steel Products Co. booked about 475 tons of 60 and 80-pound rail for the municipal railway at Seattle. The Bethlehem Steel Co. was low bidder on new rails for Los Angeles while the United Commercial Co. was low on relayers. This business involves 1900 tons of 70 to 80-pound rail.

Awards of cast iron pipe this week aggregated 1892 tons. Los Angeles placed 696 tons with B. Nicoll & Co., who will furnish French pipe, 613 tons with the American Cast Iron Pipe Co., and 583 tons with Grinnell Co., who will supply Belgian material. The National Cast Iron Pipe Co. was low bidder on 1975 tons for Sacramento, Calif. New inquiries include 1118 tons for Glendale, Calif., and 542 tons for Spokane. Pending business exceeds 4400 tons. Monerey Park, Los Angeles county, will hold a bond election Dec. 14 for 73,000 feet of 4 to 12-inch pipe, involving about 1200 tons. Little of importance has transpired in the market for standard pipe and no large inquiries are current.

Soviet Manganese Output Nearly Doubled

Washington, Dec. 14.—Manganese production in the Soviet union virtually doubled during the Soviet fiscal year ending Sept. 30, 1926, according to advices received by the Russian information bureau. Production was about 25 per cent greater than that of 1913.

Under the first year of operation by the Harriman Georgian Manganese Co., the output of the Chiaturi fields, in Soviet Georgia, was 772,000 metric tons, compared with 436,000 in 1924-25, an increase of over 80 per cent. The increase in the Nikopol fields, operated by a Soviet trust, was 114 per cent from 380,000 metric tons to 815,000 metric tons.

Exports from Chiaturi were 472,000 tons and from Nikopol 235,000 tons. It is estimated that about half of the Chiaturi exports were shipped to the United States.

Luxemburg Makes Record

Brussels, Dec. 2.—(*European Staff Service*)—Pig iron production in Luxemburg attained a fresh record in October when the tonnage produced was 222,836 metric tons, as against 214,917 tons, the previous high mark reached in September. The October output included 208,811 tons of basic bessemer pig iron, 13,335 tons of foundry pig iron and 690 tons of gray forge pig iron.

Output of steel ingots and castings in October was 195,246 metric tons, as compared with 189,152 tons in September and 195,784 tons, the preceding high mark reached in March. October output included 192,097 tons of basic bessemer steel, 2532 tons of open-hearth steel and 617 tons of electric steel. The following table gives figures for the first ten months of this year as compared with the monthly average of the three preceding years and 1913, in metric tons.

Mon. ave.	Pig iron	Steel ingots and castings
1913	212,320	110,500
1923	177,220	100,100
1924	181,100	157,195
1925	195,335	173,690
1926		
Jan.	203,673	173,875
Feb.	185,098	170,447
March	212,729	195,784
April	196,651	180,528
May	194,896	169,756
June	211,251	190,354
July	211,279	191,538
Aug.	209,549	184,280
Sept.	214,917	189,152
Oct.	222,836	195,246

Will Increase Capacity

Youngstown, O., Dec. 14.—Preparations are being made by the Carnegie Steel Co. to inaugurate an improvement program at the open hearth department of the Ohio works, which when consummated, will increase the annual ingot making capacity 100,000 tons. At present the steelmaking department of this division has an annual ingot capacity of 1,650,000 tons. The work to be undertaken will involve a period of eight months.

Natural gas first was used in this country in puddling and heating furnaces and in the generation of steam in 1874.

Ventilation Important In Industrial Risk

Probably no division of the insurance field has made such rapid strides or developed into such a large field in the last quarter of a century as has industrial insurance, both relating to personal and commercial accounts. Included in the most important items in industrial insurance is the problem of adequate ventilation.

There are certain industries where ventilation is of paramount importance, such as the manufacture of acids, chemicals, smelting plants, foundries and other factories, in which the carrying off of fumes presents a great problem. It is in such plants that eczema and various skin rashes, tuberculosis, irritation of the lungs and tissues in breathing impure air, and other diseases are often found and it is here that the extensive experimentation and analysis by insurance representatives has been of material value in forming rates for personal insurance, both life and accident type.

Investigators have found that "stale" air lowers the productivity of an employe and lessens his resistance toward various ills. The question is of great importance from the insurance and medical side, and the manufacturer's viewpoint. The result is that oftentimes such investigations have brought about plant improvements that provide for greatly improved working conditions.

Railroad Mergers Not To Meet Opposition

Washington, Dec. 14.—Large scale railroad consolidation proposals will not meet with opposition from the interstate commerce commission next year, provided plans have the approval of stockholders of interested carriers and can be proved to be in public interest, it was asserted by the commission today.

The commission, it was said, regards with favor following out of its tentative plan for merger of large carriers into independent trunk line systems in order to provide weaker short lines protection by inclusion in the consolidations.

With regard to the Nickel Plate proposal constituting unification of the New York, Chicago & St. Louis, the Chesapeake & Ohio, the Pere Marquette and the Erie railroads, it was pointed out that the objection to the original plan was based purely on its faulty financial structure. If a plan could be submitted which would eliminate the objection of minority stockholders there is little doubt among members of the commission that application of the Van Sweringens could be approved. As a transportation measure it was said no fault has been found.

Will Build Oil Depot

Toledo, O., Dec. 14.—The Roxana Petroleum Corp. announces that it will erect here a $2,000,000 oil depot having a storage capacity of 8,000,000 gallons. The depot will cover 15 acres of land, and it is hoped to have it completed by next May.

Buy Sheets For Pipe Line

New York, Dec. 14.—The Wheeling Steel Corp. has booked 410 tons of blue annealed sheets from the Lockjoint Pipe Co., Ampere, N. J., for use in connection with a concrete pipe line to be constructed in the Borough of Queens, New York.

Plan Christmas Meeting

Special features are being lined up by the entertainment committee of the Pittsburgh Foundrymen's association for its thirtieth annual Christmas dinner and entertainment which will be held in conjunction with the organization's regular meeting Dec. 20 at 6.30 p. m. in the English room of the Fort Pitt hotel. A large number of reservations have already been received by William J. Brant, secretary-treasurer, and a record-breaking attendance is assured.

To Discuss Cold Heading

Swan Hillman, National Lock Co., Rockford, Ill., will be the speaker at the next meeting of the Cleveland chapter of the American Society for Steel Treating, Dec. 17. "The Art of Cold Teading," will be the subject of Mr. Hillman's paper but in addition he will discuss roll threading and the standardization of header and screw products. Stereopticon slides will be used.

Net earnings of the Nash Motors Co., Kenosha, Wis., for the fiscal year ended Nov. 30 after all charges, are estimated to have been approximately $20,000,000, or over $7.25 a share on 2,730,000 shares of common stock, as compared with $16,256,000, or less than $6 a share on the same basis in 1925.

The Willys-Overland Co., Toledo, has increased its automobile output 138 per cent since 1922.

Pig Iron Is More Active

(*Concluded from Page* 1569)

ers have asked for increased deliveries. Sales reported in the week totaled about 3000 tons. A car wheel maker placed a large order with the St. Louis Coke & Iron Corp. This producer sold 800 tons to a valve and fitting manufacturer. Inquiries are light. Competition is keen, and the trend easier. The leading local producer still is asking $21 to $21.50, f.o.b. Granite City.

Birmingham, Ala., Dec. 14.—Pig iron buying is restricted to small lots for immediate delivery. No addition to stocks of foundry iron is noted and year will end with light surplus. The quotation is firm at $20, base, Birmingham, for foundry iron.

Philadelphia, Dec. 14.—A large volume of business was done in low phosphorus pig iron in the past week, the total amount booked being estimated at 15,000 tons, with deliveries running well into next year. Prices are unchanged. In addition to sales of basic iron reported recently, other tonnages now are under negotiation. In foundry iron the leading transaction involved 1000 to 1500 tons of low silicon iron bought by Baldwin Locomotive Works, deliveries starting immediately. Prices are steady. The Colonial Iron Co. is blowing out its furnace at Riddlesburg, Pa., this week.

Cincinnati, Dec. 14.—Pig iron sales here in the past week involved small tonnages, but several good inquiries are pending. The Louisville & Nashville railroad wants 600 to 700 tons, involving three grades. Prices are firm, with northern iron quoted $20, Ironton, and Alabama and Tennessee grades $20, Birmingham.

Inventories Hit Jobbers

(*Concluded from Page* 1581)

seasonal and the outlook for the first quarter is regarded as favorable.

Practically no change is noted in the Chicago warehouse trade. With the approaching holidays slackening in buying has been less noticeable than usual, demand holding up well for the time of the year. This year probably will close with jobbers' books showing a slight increase over 1925.

Conditions in the Cleveland warehouse market are spotty. Several jobbers find business in the past week better than in several weeks preceding, while others record a diminishing sales total. December generally will fall under November but exceed December, 1925. Prices are firm with shading in competitive territory less noticeable.

Some cutting continues in the warehouse market at Philadelphia on sheets, but it is of exceptional character. The market otherwise is unchanged from conditions of previous weeks. Demand is poor, especially due to the approach of inventory season.

Open-hearth steel production was started at the Homestead works of Carnegie, Phipps Co., now the Carnegie Steel Co., in 1888.

France Good Buyer of Farm Implements

Washington, Dec. 14.—The United States has maintained its predominance in the developing agricultural implement import trade of France, which was characterized by strong demand during the first nine months of the current year despite a greatly increased domestic production, according to advices to the department of commerce from Assistant Trade Commissioner F. P. Waller, at Paris.

The greater demand is demonstrated by the fact that French imports of those implements increased to a total of 47,036 metric tons valued at 264,453,000 francs in the first three-quarters of 1926, as compared with 35,156 tons worth 135,320,000 francs and 44,324 tons valued at 182,199,000 francs received during the corresponding periods of 1925 and 1924 respectively. The position of this country in that developing trade is shown by the fact that French imports of agricultural implements from the United States totaled 24,000 metric tons in the period under survey, as compared with 18,562 tons in the same period of 1925. Canada's share in the trade increased to 14,240 metric tons in the 1926 period from 9273 tons in the nine months of 1925.

Mowers, reapers, and binders comprised the most important items of agricultural machinery imported into France and accounted for approximately 80 per cent of the total implement imports during the first nine months of 1926. During this period a total of 36,552 metric tons of these implements were imported consisting of 20,266 metric tons of binders, 10,273 tons of mowers, and 6013 tons of reapers. This compares favorably with a total of 26,988 metric tons imported in the same period of 1925, of which 15,783 metric tons were binders, 9839 tons were mowers and 1366 tons were reapers.

Adding Foundry Building

Announcement is made that the Standard Foundry Co., Racine, Wis., is building a foundry building 110 x 240 feet to run parallel with the core building, completed a year ago. The present foundry building will be converted into a cleaning room and inspection department. The completed foundry unit will have a capacity of 100 tons of castings daily, and will be used exclusively for the production of automobile engine cylinders and heads. A 3-ton electric furnace and two cupolas comprise the melting equipment. A. A. Wickland & Co. Inc., Chicago, are the engineers. A. R. Janes is president of the Standard Foundry Co.

Urges More Legislation on Mine Safety

Pittsburgh, Dec. 14.—Passage of additional suitable legislation governing safety measures in coal mines, promulgation of company safety rules, education campaigns among miners and perpetuation of vigorous safety and mine foremen were some of the items generally recommended and advocated by coal mine engineers, superintendents and officials at last Thursday's session of the fortieth annual meeting of the Coal Mining Institute of America. Nearly 250 engineers and coal operators from various points in Pennsylvania, Illinois and other states, and representatives from points as far distant as New Zealand, participated.

At the business session held Wednesday morning, the following officers were elected: President, Dr. John J. Rutledge, Baltimore; first vice president, J. W. Paul, Pittsburgh; second vice president, T. R. Johns, Johnstown, Pa.; third vice president, W. H. Howarth; secretary-treasurer, H. D. Mason Jr., Ebensburg, Pa. Ten directors also were chosen.

Discussion on Thursday of the safety question brought out that while state laws pertaining to safety measures and appliances had to date proven fairly adequate, education of the miners and foremen had in many instances been sadly neglected, and that a great many mine accidents could be prevented if officials and superintendents paid greater attention to the miner's thorough acquaintance of safety rules. The meeting ended Friday with an inspection trip to the United States bureau of mines experimental mine at Bruceton, Pa., arranged by A. C. Fieldner of the Pittsburgh bureau. A number of experiments were demonstrated by Mr. Fieldner and his assistants for the benefit of the delegates.

Conveyors Speed Output

Progressive machining and assembly methods in the production of agricultural implements, similar to those adopted in the automobile industry, have been put under way by the International Harvester Co., Chicago, with good results, it is stated. Cyrus McCormick Jr., vice president in charge of manufacturing, reports production "coming off the chain at a daily increasing rate."

Manufacturers Give Away Profits, Lacking Costs

Many manufacturers are giving away profits which they should make as a result of advantageous purchases, and still others are too prone to gather losses when conditions of the market are reversed. Few manufacturers avail themselves of the system of accounting that reflects normal manufacturing profits separate and apart from those profits and losses which accrue by reasons of market conditions. These indictments of managerial efficiency appear in a booklet entitled "Standard Costs" published by Ernst & Ernst, New York, accountants and auditors.

The controlling principle in any system of standard costs, according to these authorities, is that of the budget. The budget provides a measuring stick that will indicate the trend of actual costs in their variation from standards. To the extent that the actual cost varies from the standard just to that extent will the anticipated profits vary from actual profits.

"The manufacturer," says the booklet, "should not be influenced by the fact that material may be carried in the inventory at a lower price than the replacement cost. He should keep in mind at all times in quoting prices the replacement cost. There is a decided difference between profit taken on an inventory through a favorable turn of the market and a profit derived from a real merchandising effort."

Standard costs are not permanent costs, they should be revised from time to time to reflect any increase or decrease in cost due to changed conditions. Standard costs are "common sense" costs and they should reflect the best judgment and experience on what cost ought to be.

"A definite expense minimum is necessary in conducting a business, regardless of volume of production or sales," the booklet says. "This should be a known quantity. Increasing volume of business calls for increase in expense. But beyond a certain point the expense does not increase in the same progressive ratio as production. Then later, another point is reached, which, to exceed, requires for a time, application of a larger proportion of expense. The art of expense control reaches its highest state of effectiveness when management has determined upon a reliable measure for gaging the amount of expense necessary for operating a business under varying degrees of activity in production and sales.

"With the expense budget established, and production determined upon, and both found to be consistent with plant capacity, the standard burden-rate is then decided upon and expressed as an hourly rate, or as a percentage on direct labor, or as a rate per unit of production."

A. S. M. E. Attains New Heights

Forty-Seventh Annual Convention Largest and Most Diversified Meeting —Combustion Problems, Education and Apprentice Training and Machine Shop Practices Feature Sectional Conferences

ATTENDED by 2212 members and guests, the forty-seventh annual meeting of the American Society of Mechanical Engineers, New York, Dec. 6-10, recorded itself as one of the most successful that the society has held. The registration exceeded the previous record of 2174. Many of the 66 sections of the society and of its 87 student branches were represented. The program was the largest that had been attempted, 72 papers being scheduled this year compared with about 43 in 1925. More divisional meetings were held this year, four or five sections holding simultaneous sessions.

Fuels and combustion problems formed one of the main topics on the program. Machine shop practice, industrial education, oil and gas power, management and materials handling were other subjects discussed.

On the president's night, William A. Abbott, retiring head of the society gave his presidential address and Charles M. Schwab, president-elect, was formally introduced. The John Fritz gold medal for engineering achievement was presented to Elmer Ambrose Sperry.

Dr. Cecil Howard Lander, director of fuels research, department of scientific and industrial research, London, Eng., gave the Robert Henry Thurston lecture and Dr. Davis Rich Dewey, department of economics, Massachusetts Institute of Technology, Cambridge, Mass., delivered the Henry Robinson Towne lecture.

Stress Value of Proper Apprentice Training

WHAT promised to be the most interesting session of the convention, was relieved somewhat in the failure of one of the principals to appear. Matthew Woll, president, International Photo-Engravers union, Washington, and vice president of the American Federation of Labor, had prepared a paper on "Educational Training for Industry." As Mr. Woll was called out of town the day of the meeting, the paper was not read in full. Discussions were presented, however, but the absence of Mr. Woll prevented any rebuttal.

Mr. Woll's paper, read in part, included the following statements which were refuted in the discussions. "Organized labor's interest in education for industry is rooted in one of its most fundamental purposes, the conservation of craftsmanship. Creative expression in work is a strong motive with all men who do work of any kind, be they artists, business men or the men who run our machines. In the workmen's nearness to drudgery, the need for creative expression is urgent. To fill this need, the men naturally turn to their union, since it is the embodiment of their common craft interest."

Another theory advanced by Mr. Woll was that trade education in public schools should be under the joint control of employers, unions and schools. L. D. Burlingame, supervisor of apprentice training for Brown & Sharpe Mfg. Co., Providence, R. I., in discussing Mr. Woll's paper claimed that trade experienced men should be entrusted with the duty of rendering expert guidance to apprentices.

Realities Far From Ideals

E. F. duBrul, general manager, National Machine Tool Builders association, claimed that all unions do not practice the high ideals pointed out by Mr. Woll. The paper expressed the ideals of a few thinkers and not the majority of labor unions, according to Mr. duBrul. "All workmen do not feel the urge to creative work as Mr. Woll stated, and the realities are far from those ideals," Mr. duBrul said. No competent manager would be willing to transfer responsibilties of setting standards of craftsmanship to the unions.

Robert E. Newcomb, Worthington Pump & Machinery Corp., Holyoke, Mass., plant, agreed with Mr. Woll that the labor unions were guardians of craftsmanship, but went farther to say that they had locked it up tight, and had refused to pass this craftsmanship along to new generations and new workers. Mr. Newcomb said also that labor unions take in all kinds of men when necessary to build up their organizations. Men with no skill are admitted during membership drives, and quality of craftsmanship is not considered.

Carl S. Coler, manager, educational department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in his paper on "Trades Training," presented policies and methods which had been successful in use by his company. He suggested placing new apprentices with the best instructors and foremen, men who had the correct view of apprentice psychology. The training of apprentices is one of the best contacts between executives and foremen, keeping the latter on their toes, and familiar with broad educational policies. The foreman is the strategic man in development of an apprentice program.

"The problem of selection is important, but more essential is the availability of large numbers of prospects to select from," he said. "Young men must keep things shifting or they will shift for themselves," Mr. Coler said in commenting on labor turnover among apprentices. A point in dispute during the discussion was the employment of a simple arithmetical test to determine the aptitude of an apprentice for certain types of work.

J. H. Bigelow, New York Telephone Co.; J. E. Goss, Brown & Sharpe Mfg.

New Officers

AMERICAN SOCIETY OF MECHANICAL ENGINEERS

President
Charles M. Schwab

Vice Presidents
Charles L. Newcomb — E. O. Eastwood
Edwards R. Fish

Managers
Paul Doty — Ralph E. Flanders
Conrad N. Lauer

Treasurer
*Erick Oberg

Secretary
*Calvin W. Rice

*Re-elected.

Co. and J. A. Randall, Mechanics institute, Rochester, N. Y., were among those discussing Mr. Coler's paper. W. E. Wickenden, director of investigation, Society for Promotion of Engineering Education also discussed the paper.

J. T. Faig, chairman of the committee on education and training of the Engineering society, in discussing the subject, said, "If we are to have good engineering education, we must have good industrial education, also good technical education. We have been concentrating too much effort on engineering colleges and are topheavy on that. Perhaps nothing better could be done than to have a clearer definition of the aims to be accomplished." Several speakers added impromptu discussions from the floor.

Credits and Fuels Were Subjects of Lecturers

UTILIZATION of coal and recent developments in that science formed the subject matter of the Robert Henry Thurston lecture delivered by Cecil H. Lander. "It may truthfully be said that the practice of mechanical engineering deals with two classes of raw material, namely, metals and fuels; for while the former is essential to the construction of the machines which bulk so largely in the practice of mechanical engineering, these machines would in the main be useless without the fuel necessary to drive them." Dr. Lander defined the science of coal utilization as dealing "with the stepping up of the thermal availability of the raw coal." "No avenue should be left unexplored which may lead to improvements in our methods of coal utilization," he continued.

"In all questions of buying and selling coal, and in the utilization of coal, the problem of its accurate chemical analysis arises. This subject is especially pertinent to the British export trade, since it is well known that the competition for the sale of coal in various countries is becoming increasingly keen. Consumers are demanding uniformity of quality and in some cases are making their contracts on the basis of calorific value."

Dr. Lander stressed the proper selling of coal, stating on that subject that "the ideal method of coal selling might in fact be compared with the 'selling service' of certain motor cars. The consumer should be thoroughly well informed on the properties and characteristics of the product in relation to the particular way in which he proposes to consume it in his works."

Investigations into the subject of metallurgical coke reveal that reduction of furnace width is claimed to shorten the periods used, with subsequent increase in the output per oven; that the coke is more uniform and that coke suitable for metallurgical purposes can be made from coals before considered unfit.

Low temperature carbonization also was discussed at length in the paper. Dr. Lander by table illustrated the yields of different products in coal obtained by carbonizing temperatures from 400 to 700 degrees Cent. Production of oil from coal by methods other than carbonization were described, by the principle of synthetic fuels from carbon monoxide and hydrogen and hydrogenation of coal. The X-ray is being used more freely in the study of coal analysis.

The second annual Henry Robinson Towne lecture, inaugurated in 1925 to present the newest thought on topics in the zone between engineering and economics, was delivered by Dr. Davis Rich Dewey, of Massachusetts Institute of Technology. His subject was "The Credit Factor in the Structure of Industry." In his paper, Dr. Dewey presented an extensive analysis of credits, pointing out the influence of that phase of economics on the successful direction of business.

Machine Shop Section Reviewed Advances

SESSIONS on machine shop practice were held in three groups, the first containing papers on metals, the second on chromium plating, milling cutters and viewpoint in machine shops and the third on worm-wheel contact, distribution of belt creep and the plastic behavior of metal in drawing.

O. W. Boston, associate professor of shop practice and director of engineering shops, University of Michigan, Ann Arbor, Mich., opened the first session with "A Research in the Elements of Metal Cutting." His paper was technically confined to results of investigation of tool sharpness, chip dimensions and force involved. H. J. French, senior metallurgist and T. G. Digges, assistant scientist, bureau of standards, presented a joint paper on "Rough Turning with Particular Reference to the Steel Cut." This contribution also was highly technical in its description of tests. A paper on "Work-Hardening Properties of Metals," by Edward G. Herbert, of Manchester, Eng., was presented by J. K. Wood.

William Blum, chemist of the bureau of standards, presented the first paper of the second session, on "Chromium Plating." In discussing his subject he said that chromium plating is the most startling development in the plating field for the past 10 years, and had been called the sensation of the plating industry.

"Chromium properties warranting consideration in its application to engineering materials," he said, "are: First, hardness. Electro deposits of chromium have been found by scratch hardness to be the hardest metal yet tested. Second, resistance to tarnish and oxidation. When the original finish is bright, it will stay bright, under many conditions. Chromium is impervious to nitric acid and sulphur and most other corrosives, being readily attacked, however, by hydrochloric. Third, reflecting power, not equal to that of silver, but will stay bright where silver will tarnish." Under most actual conditions, chromium is passive and not a protection against corrosion. Chromium does not have any unique properties of iron and steel protection. Mr. Blum said that chromium plating had been accomplished 70 years ago, but only in the past 10 years have the details been mastered.

Three types of chromium plating were described, the milky or softest deposit, also where a burnt spongy deposit was obtained by too high or low current density or temperature, and the proper type. Chromium was described as having poor throwing power, the action that places a deposit on surfaces, and hence would be unsatisfactory on rough surfaces or in recesses. Consequently there is a limitation of the products that can be chromium plated satisfactorily. The power cost in chromium plating, usually negligible in other types, is from 5 to 10 times that of nickel plating. A higher voltage is used in

(*Concluded on Page* 1591)

General view of Grand Central Palace showing three of the four floors on which exhibits were held

Power Show Sets New Record In Exhibits and Attendance

NEW records of accomplishment made the fifth annual Exposition of Power and Mechanical Engineering at Grand Central Palace, New York, last week, the greatest yet staged. Exhibitors at the show last week totaled 488, compared with 401 in 1925. Attendance last year was estimated at 85,000 while the preliminary count on the recent show indicates that from 95,000 to 100,000 persons visited the exposition. Approximately 33 1/3 per cent more floor space was utilized by exhibitors in 1926 than was required in 1925. Four floors of Grand Central Palace were used for exhibits last week compared with three floors in 1925.

The only distinctly new product exhibited was a lamp shown by Sunlike Illuminating Co. From 40 to 50 per cent of the companies exhibiting, however, had incorporated in their products improvements made since the 1925 show. Prominent in the displays were exhibits of units of power generation, with many phases of combustion engineering emphasized. Boilers, stokers, refractory and furnace construction products, recording and control instruments, piping, valves and similar departments of power origination and transmission were well represented. One of the most commonly displayed of individual items was steam and radiator traps. Ball and roller bearings, gear reducers and chains were among the other products prominent in the show. The importance of industrial lubrication in power plant operation was emphasized more this year than previously.

Metalworking machinery, including lathes, drills, shears, saws and cutting equipment, testing machines and millers, was shown by about a dozen companies.

Fuel and Transmission Equipment Prominent

METALWORKING machinery and machine tools, as such, were relegated to a secondary position of importance in the power show, less than a score of companies being represented. One of the largest machinery exhibits was displayed by Manning, Maxwell & Moore, Inc., New York. In addition to safety valves, injectors, pump regulators and rotary compressors, it displayed several small lathes, with a large lathe in operation and a large milling machine also running. Buffalo Forge Co., Buffalo, in addition to its multistage blower and exhauster, exhibited a punch, shear and bar cutter in operation. Several hydraulic machines were shown by Techno Service Corp., New York. Watson-Stillman Co., New York, also displayed hydraulic machinery, having a 200-ton rapid action stamping press and a 50-ton hydraulic laboratory press in operation. A metal nibbling machine was operated by Unishear Co. Inc., New York.

Punching and shearing machinery were shown by Henry Pels & Co., New York, one machine being in operation. Triplex Machine Tool Co., New York, exhibited filing and sawing machines, a jig borer, a lathe, and micrometer dial gages. Andrew C. Campbell, Inc., Bridgeport, Conn., had in operation a milling machine. Portable grinders, floor grinders and other tools were shown by Keller Mechanical Engineering Corp., Brooklyn, N. Y. Precision Grinding Wheel Co. Inc., Philadelphia, also had on display portable and floor grinders. A lathe,

grinder and parts for small electric tools were shown by the Wisconsin Electric Co., Racine, Wis.

Vulcan Electric Brazer & Welder Co., Paterson, N. J., had on display electric band saw brazers. Benjamin E. Jarvis Inc., Newark, N. J., exhibited bench and band saws. Vertical and horizontal metal saws in operation were the features of the booth of Racine Tool & Machine Co., Racine, Wis. Metal saws were displayed also by Peerless Machine Co., Racine, Wis.

Included in small tools and metal-working equipment exhibits were Speednut Wrench Corp., Chicago; Wahlstrom Tool Co., Brooklyn, N. Y., showing automatic chucks and tapping attachments on a four-spindle drill press, and Snap-On-Wrench Co., Chicago.

Automatic screw machines in operation and automatic screw machine products were exhibited by the National Acme Co., Cleveland. M. B. Skinner Co., New York, displayed pipe repairing equipment; Leavitt Machine Co., Orange, Mass., valve reseaters; National Lead Co., New York, expansion bolts; Tinius Olsen Testing Machine Co., Philadelphia, testing machinery. A. M. Byers Co., Pittsburgh, exhibited samples of its pipe, as did National Tube Co., Pittsburgh. Alemite Die Casting & Mfg. Co., Chicago, had on display various products which it has manufactured. Chicago Pipethread Machine Co., Racine, Wis., had on exhibition power pipe threading machinery. Curtis & Curtis Co., Bridgeport, Conn., also showed pipe threading and cutting equipment. An electric rivet heater was shown by American Hoist & Derrick Co., St. Paul.

Welding equipment was exhibited by some of the leading manufacturers in that field. Air Reduction Sales Co., New York, had on display its portable welding units, nozzles, etc. Oxweld Acetylene Co., New York, including the Linde Air Products Co. and Haynes-Stellite Co. divisions, exhibited some of its welded work and also its portable welding units. Lincoln Electric Co., Cleveland, in addition to parts of electric motors constructed by welding, and a motor running submerged in water had in operation a portable welding unit. A two-speed elevator motor and several other units also were on display. Wilson Welder & Metals Co., Hoboken, N. J., had a welding unit in operation in addition to its display of equipment.

Ball and roller bearings and shafting for power transmission formed an important part in the power show. Among exhibitors in this classification were: Timken Roller Bearing Co., Canton, O., roller bearings; Marlin-Rockwell Corp., Jamestown, N. Y., ball bearings with measuring equipment showing precision to ten-thousandths of an inch; Strom Bearing Co., Chicago; Rollway Bearing Co., Inc., Syracuse, N. Y., roller bearings; S. Fabian Goodman, New York, roller and ball bearings, castors and wheels; Standard Steel & Bearings Inc., Plainville, Conn., showing various stages of manufacture of ball bearings; Norma-Hoffman Bearings Corp., Stamford, Conn., ball, thrust and roller bearings; Fafnir Bearing Corp., New Britain, Conn., ball bearings; and Ahlberg Bearing Co., Chicago, in addition to samples of ball bearings, showed results of precision grindings with a bearing rotating on one ball. Hyatt Roller Bearing Co., Newark, N. J., displayed power transmission equipment and hoists, using its roller bearings. S. K. F. Industries, New York, exhibited its bearing products.

Gears and speed reducers, as applied to power transmission problems were shown by W. A. Jones Foundry & Machine Co., Chicago, spur gear and worm gear speed reducers and power transmission apparatus; Boston Gear Works Sales Co. Inc., New York, gears and speed reducers; Wm. Ganschow Co., Chicago, gears; Niles Gear Co. division of Niles-Bement-Pond Co., New York, gears in operation; Horsburgh & Scott Co., Cleveland, worm gears and speed reducers; Foote Bros. Gear & Machine Co., Chicago, herringbone gears and speed reducers; DeLaval Steam Turbine Co., helical gears and worm reduction gear drives in addition to its turbines, pumps, compressors, couplings, etc. Terry Steam Turbine Co., Hartford, Conn., also displayed reduction gears in addition to its usual line of shaft couplings and steam turbines. Philadelphia Gear Works, Philadelphia, had in operation a speed reduction unit. Cleveland Worm & Gear Co., Cleveland, exhibited its line of gears and speed reducing apparatus.

INDUSTRIAL HEATING EQUIPMENT EXHIBITS COMPRISED A PROMINENT PART OF THE FIFTH ANNUAL EXPOSITION

One of the largest classifications of equipment exhibited at the power show included valves, steam traps, piping specialties and flexible couplings. Among the manufacturers whose exhibits consisted mostly of valves were Lunkenheimer Co., Cincinnati; Crane Co., Chicago; A. W. Cash Co., Decatur, Ill.; Walworth Co., Boston; Merco Nordstrom Valve Co., San Francisco; Pittsburgh Piping & Equipment Co., Pittsburgh, valves and joints; Coffin Valve Co., Boston; Atwold & Morrill Co., Salem, Mass.; Leslie Co., Lyndhurst, N. J., pressure regulating and reducing valves; Combination Pump Valve Co., Philadelphia; Yarnall-Waring Co., Philadelphia; Ashton Valve Co., Boston; and Powell Valve Co., Cincinnati.

Many Exhibit Couplings and Traps

Flexible couplings, steam traps and other piping specialties were exhibited by Atlas Valve Co., Newark, N. J.; Hoffman Specialty Co. Inc., Waterbury, Conn.; Justus Steam Trap Co., Napanock, N. Y.; W. H. Nicholson & Co., Wilkes-Barre, Pa.; Jenkins Bros., New York; Henry Vogt Machine Co., Cincinnati; E. F. Keating Pipe Bending & Supply Co., Hartford, Conn.; Sarco Co., New York; Pittsburgh Valve Foundry & Construction Co., Pittsburgh; Crosby Steam Gage & Valve Co., Boston; Bartlett-Hayward

Co., Baltimore; Ajax Flexible Coupling Co., Westfield, N. Y.; Davis Engineering Corp., New York; Wheeler Condensor & Engineering Co., New York; and Falk Corp., Milwaukee.

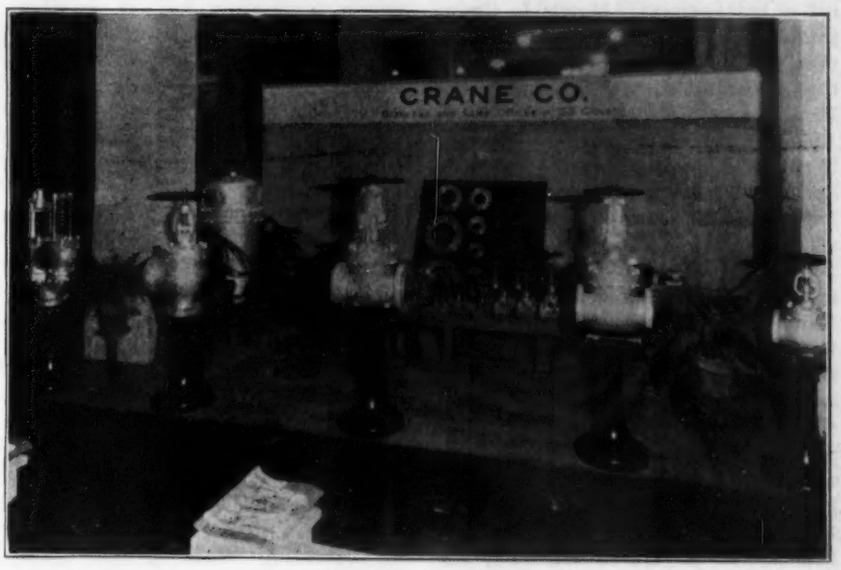
Furnace stoking equipment, both mechanical and hand, powdered fuel and other handling appliances also formed an important section of the show. Neemes Foundry Inc., Troy, N. Y., demonstrated shaking and dumping grates with automatic and hand shakers; Flynn & Emrich Co., Baltimore, had a three-door furnace with three automatic stokers in operation. McClave-Brooks Co., Scranton, Pa., exhibited hand grates and stokers. Detroit Stoker Co., Detroit, had on display both overfeed and underfeed stokers. A two-retort automatic underfeed stoker was displayed by Riley Stoker Co., Worcester, Mass.

Oil burning and pulverized coal burning systems were displayed by Fuller-Lehigh Co., Fullerton, Pa.; Coen Co., San Francisco; American Pulverizer Co., St. Louis; Combustion Service Corp., subsidiary of Research Engineering Corp., New York and Furnace Engineering Co., New York. R. H. Beaumont Co., Philadelphia, had in operation a miniature installation of drag scraper for storage with tram car and skip hoist. Peabody Engineering Corp., New York, also displayed oil burning and combustion equipment. Hagan Corp., Pittsburgh, Combustion Engineering Corp., New York; Diamond Power Specialty Corp., Detroit, and the Engineer Co., New York, were among other exhibitors of combustion equipment and systems.

Exhibits Wall Constructions

Refractories and special cooling processes for furnace walls drew the attention of many exhibitors. Among the companies exhibiting furnace wall construction were: Power Specialty Co., New York; Plibrico Co., Chicago, jointless lining; Carborundum Co., Niagara Falls, N. Y., bricks and cements; Quigley Furnace Specialties Corp., New York, refractory air gun for bonding refractory bricks; Drake Non-Clinkering Furnace Block Co. Inc., New York; Norton Co., Worcester, Mass.; American Arch Co., New York; Queen's Run Refractories Co. Inc., Lock Haven, Pa.; A. P. Green Fire Brick Co. and Liptak Fire Brick Arch Co. both of Mexico, Mo.; Keystone Refractories Co., New York; King Refractories Co., Buffalo. S. Obermayer Co., Newark, N. J. and Celite Products Co., Los Angeles.

Indicating and recording instruments, electrical control boards and other similar appliances were shown by S-C Regulator Mfg. Co., Fostoria, O.; Moto Meter Co. Inc., Long Island City, N. Y.; Foxboro Co., Foxboro, Mass.; Bristol Co., Waterbury, Conn.; Paul B. Huyette Co., New York; Smoot Engineering Corp., New York; Ruggles-Klingeman Mfg. Co., Salem, Mass.; Charles Englehard Co., New York; Leeds & Northrup Co., Philadelphia; Liberty Electric Corp., Stamford, Conn.; the Merriam Co., Cleveland and Pyrometer Instrument Corp., New York. Brown Instrument Co., Philadelphia, introduced a new type flow meter using the inductance bridge principle. Uehling Instrument Co., Paterson, N. J., also had new improvements in control and recording equipment. Republic Flow Meters Co., Chicago; General Electric Co., Schenectady, N. Y.; Taylor Instrument Co., Rochester, N. Y., exhibited control and recording equipment.



VALVES, PIPING, AND OTHER POWER TRANSMISSION PRODUCTS WERE EXHIBITED BY MANY COMPANIES

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., exhibited a turbine generator, retort stoker, silent gears and a 150-kilowatt generator cut away to show gearing. Allis-Chalmers Mfg. Co., Milwaukee, operated a self-ventilating motor, and displayed centrifugal pumps, speed reducers and switch gear apparatus. Ingersoll-Rand Co., New York, through its A. S. Cameron Steam Pump Works, exhibited various pumps. Its 900-pound pressure boiler feed pump at the show was for installation at Solvay Process Co., Syracuse, N. Y.

Chain and power transmission products were exhibited by Baldwin Chain & Mfg. Co., Worcester, Mass.; E. G. Long Co., New York, direct transmission by gears; Whitney Mfg. Co., Hartford, Conn.; Morse Chain Co., Ithaca, N. Y., and Ramsey Chain Co., Albany, N. Y. Insulating materials were shown by Armstrong Cork & Insulation Co., Pittsburgh; and lubricating systems by Gits Bros. Mfg. Co., Lunkenheimer Co. and others.

Keystone Lubricating Co., Pittsburgh, had in operation a narrow cold finishing strip mill showing its application of lubrication to rolling mills.

Among nonferrous metals exhibitors were International Nickel Co., New York; Mueller Brass Co., Port Huron, Mich.; American Brass Co., and Scovill Mfg. Co.

American Foundry Equipment Co. Mishawaka, Ind., showed an automatic drive, speed reducer, belt tightener and shock absorber in one, in operation on a drill press.

Otis Elevator Co. exhibited a line of castings, both rough and finished, from its castings division. Several companies such as Irving Iron Works, Long Island City, N. Y., exhibited non slip floor gratings. Johns-Manville Co., New York, displayed various asbestos products.

Hold Welding Conference

To promote the welding industry throughout Indiana, the engineering extension department of Purdue university, Lafayette, Ind., is sponsoring at the university on Dec. 15-17, a conference of engineers and manufacturers interested in welding. The three days will be spent in discussing various phases and methods of welding. Several manufacturers of welding apparatus will demonstrate the latest developments in welding equipment and the different types of work which can be welded. Plant officials, superintendents and foremen of welding departments will confer.

Review Management Problems

Costs, Personnel, Research and Organization Prominent on Program of Taylor Society Meeting in New York—Increased Efficiency in Executive Direction the Keynote of Sessions

SCIENTIFIC management as a fundamental necessity for successful business operation is becoming increasingly important, as expressed by various speakers at the meetings of the Taylor Society Inc. in New York last week. One of the most important developments during the sessions was the practical assurance that the second international management congress would be held in Italy next year. The first such congress, at Prague in 1924, stimulated considerably European interest in management. Morris L. Cooke, president elect of the Taylor society presided over the joint session of that organization with the American Management association, committee on American participation in international management congresses, management division, American Society of Mechanical Engineers and the Society of Industrial Engineers.

Harold B. Butler, deputy director, international labor office, Geneva, Switzerland, and who has been in the United States investigating conditions here, made the main address in the international meeting. Other speakers at the session were Stanislav Spacek, secretary of the international committee of scientific management, Prague, Czechoslovakia; Conrad d' Angelo, consulting engineer, Paris, France; W. H. O'Neil Manning, National Institute of Industrial Psychology, London, Eng.; C. H. van der Leeuw, vice president, International Association for the Study and Improvement of Human Relations and Conditions in Industry, Rotterdam, Holland, and Irene M. Witte, Berlin, Germany. Robert T. Kent, one time associate of the late Frederick W. Taylor, in the study of scientific management, and Henry S. Dennison of Dennison Mfg. Co., Framingham, Mass., also spoke on the international management congress.

Discuss the Practical Man

The meetings opened the morning of Dec. 8 with Meyer Bloomfield, industrial consultant, presenting a paper on "The Practical Man in the Making." Samuel S. Board, director of Yale placement bureau presided. L. W. Wallace, secretary of the American Engineering Council, presided over a symposium that afternoon on "Why and How I Use Certain Text Books and Other Material in Teaching Industrial Management."

A feature of the Taylor society meetings was an address by Raymond L. Tweedy, secretary of the Massachusetts Manufacturers Research association, Boston, which described the purposes of that body and its method of functioning. Mr. Tweedy's talk was the first that has been made about that association, despite the fact that it is a pioneer in its field.

Organized five years ago, the Massachusetts Manufacturers Research association has 11 members. These include manufacturers of paper, paper specialties, leather belting, a maker of pipe and fittings, a builder of machine tools, a builder of heavy machinery, a tanning company and several other manufacturers, as well as a university.

These manufacturers operate the research association like a pool to which they contribute information of various kinds and from which, in turn, they obtain information. Each member communicates to the others in the association the fruit of its efforts in various directions and in this way duplication of costly experimental work is eliminated.

One of the important activities is the placing under fire of each works manager in turn. One month all of the operating heads of the various members, on different days, pay visits at one of the plants and as a result of their visits criticize the visited plant on about a hundred different points. They send in their reports to the association and the association tabulates and combines them into one blanket report and this is sent to the production head of the plant under scrutiny. Under the system in use, the works manager at that plant is given two months to act on the criticisms and at the end of that time he must report to the association as to what he did with respect to the criticisms. Mr. Tweedy said that the results of these critical visits at the various plants in turn have brought about savings in operating costs running into large figures.

Through the research association the member companies loan each other their experts in various lines of work.

Experts in the employ of the various member companies are at the call of the other members, thus giving them consulting service of the highest caliber. As a result of following the advice of the transportation expert of one of the companies, two member companies are saving a total of $35,000 a year in the operation of their plant transportation facilities. The purchasing agents get together at intervals. The sales managers have regular monthly meetings.

Pursue Studies Co-operatively

For a long time studies have been pursued co-operatively with a view to getting out what has come to be known by the members as the "M. R. A. demand index." This index is based on various factors and already the members are able to use it to great advantage in adjusting their production schedules in anticipation of the demand. In conclusion, Mr. Tweedy declared that the results to date, valuable as they are, are expected to be dwarfed by the results that still are to come in the future.

Dr. Harlow S. Person, managing director of the Taylor society, read an extensive paper on management's concern in methods of research. He declared that research has become an important function in management, and that research must be relied on for the development of the science of management. He described the cycles in the evolution of the science of management. First there is a period of uncertainty as to how to solve a particular problem. Then there is an analysis of facts and the reaching of conclusions. This involves the uncovering of other facts which have a related bearing. Then there is a redefinition of the original problem involving the additional facts which the first conclusions have suggested, and there is another analysis and another drawing of conclusions. That is the cycle by which the science of management is evolved, said Dr. Persons, and it keeps up indefinitely.

Mary van Kleeck, of the Russell Sage Foundation, New York, talked extensively about the use of the interview method as a method of research in management. Every interview, she said, involves as many different personalities as there are people engaged in it. Miss van Kleeck emphasized it must be borne in mind

that the interviews of themselves are of secondary importance, and so are the facts revealed in these interviews.

Joint meetings of the Taylor society and American Society of Mechanical Enginers on Dec. 9 produced the largest attendance of any sessions held by the two societies. Approximately 300 persons were present when L. P. Alford, vice president, Ronald Press Co., New York, and editor of *Manufacturing Industry*, read his paper on "Laws of Manufacturing Management." This paper presented approximately 40 laws for manufacturing management, 16 applying to materials, 11 to labor, 10 on management itself and 3 or 4 on wages.

Clarence G. Stoll, vice president and general manager of manufacture, Western Electric Co., Chicago, followed with a paper on "Production Control." He divides production control into ten qualities some of which are organization, plant layout, planning, scheduling, tracing, inspecting, counting, investment, costs and budget. Control of costs is fundamentally important, according to Mr. Stoll, who segregates into these three classifications different types of costs; labor, material, expenses. Of these, expenses is the least controllable, being composed of taxes, non productive pay, changes and repairs, depreciation on small tools, and other direct expenses.

J. C. Clark, Industrial Relations Counselors, Inc., New York, opened the afternoon session of Dec. 9 with a paper on "Railroad Organization." Percy S. Brown, president of the Taylor society, presided.

"Vitalizing vs. Centralizing Organizations" was the subject of the paper of Robert E. Newcomb, superintendent, Deane works, Worthington Pump & Machinery Corp., Holyoke, Mass. Jerome C. White, of the editorial staff, *Coal Age*, New York, presented a paper on "An Experiment in Scientific Management in the Coal-Mine Industry."

Fundamentals of all organizations are planning structure, organizing personnel and developing the service, according to H. A. Hopf, senior member, H. A. Hopf & Co., New York, management engineers, in his paper on "Problems of Bank Organization." One important question discussed briefly by the paper, but not answered was, "How much can we afford to spend to get new business." Mr. Hopf claimed that the success of any business depends upon the extent to which the principles of scientific management are employed.

The central problem of business is efficiency, according to John Maurice Clark, who presented a paper on "Overhead Costs and Managerial Policy," at the session Friday afternoon. Joseph H. Willitts, Wharton school of finance and industry, University of Pennsylvania, presided. Mr. Clark stated that the public has an interest in prices based on cost, a reasonable cost, plus a fair profit. Any tendency upward from this is exploitation, downward is demoralization.

Prof. J. B. Clark of Columbia university, in discussing the paper claimed that there is too much stressing of overhead costs and trying to reduce them with injurious effects to business. In many cases he claimed, overhead costs may be increased by adding office engineers who in turn effect labor savings in the plant which are called productive costs.

Mary P. Follett presented a paper on "Leadership and the Illusion of Final Authority." She stated that where knowledge and experience are located, there should be authority, whether up or down the line. Various examples were cited to show the value of this theory.

J. C. Heckman, general sales manager, Cheney Bros., New York, presided over the Friday evening meeting at which William O. Jelleme, comptroller, Cohn-Hall-Marx Co., New York, presented a paper on "The Influence of the Current Buying Habit on Managerial Policy and Practices."

Fundamentals of organization were discussed at the meeting Dec. 11 presided over by Nathaniel G. Burleigh, Amos Tuck school, Dartmouth college, Hanover, N. H. A. B. Rich, Dennison Mfg. Co., Framingham, Mass., presented a paper on "The Problems of Staff Men in Industry."

A. S. M. E. Attains New Heights

(*Concluded from Page* 1586)

chromium deposition. Chromium is about 3 cents per square foot applied. Nickel plating is about 40 cents a pound and chromium 80 cents.

The hardness of chromium and its application was discussed by Mr. Blum who told how a 2/10,000-inch chromium deposit on nickel steel for plates used in printing money caused the plates to last three to four times as long as the nickel surface and twice as long as case hardened steel.

A. L. deLeeuw, consulting engineer of New York, presented a paper on "The Change of Viewpoint of the Machine Shop." N. N. Sawin, research engineer, Skoda Works, Pilsen, Czechoslovakia, had prepared a paper on "Theory of Milling Cutters," which was presented by A. L. Jenkins.

Earl Buckingham, associate professor, standardization and measurement, Massachusetts Institute of Technology, Cambridge, Mass., presented a paper on "Work-Wheel Contact" in the third machine shop practice session. C. L. Eksergian, research engineer, E. G. Budd Mfg. Co., Philadelphia, presented a paper on "The Plastic Behavior of Metal in Drawing." The paper of R. F. Jones, research engineer, the leather belting exchange foundation, Cornell university, Ithaca, N. Y., was on "The Distribution of Belt Creep and Slip."

Harold V. Coes, vice president and general manager, Belden Mfg. Co., Chicago, in his paper on "Industry's Annual Tax for Materials Handling and Suggestions for its Elimination," at the materials handling session, explained that a billion dollars a year could be saved by utilization of equipment now available and through proper co-ordination of production with equipment for moving materials. "The Industrial Applications of Conveyor Systems," was the paper presented by C. A. Burton, sales engineer, Alvey Mfg. Co., New York.

Prediction that airplanes selling as low as $2500 soon would be commonly available was made at the session on aeronautics. Two transoceanic air liners, larger than the SHENANDOAH are being planned by the navy according to the discussion. Substitution of duralumin sheets for rubberized cotton wing and fuselage covering also was discussed. "Industrial Applications of the Flettner Rotor" were discaused by F. O. Willhofft, consulting engineer of New York.

"Illinois is one of the most potent fields for the low carbonization of fuel, and as this coal is unable to be disposed of ordinarily, more attention is being paid to Illinois coal now than before," A. C. Fieldner said in his paper on "The Low-Temperature Carbonization of Coal," in the session on by-product processing of coal. Mr. Fieldner, chief chemist, bureau of mines, and superintendent of the Pittsburgh experiment station, claimed that gas is the revenue producer of coal carbonization.

William H. Blauvelt, consulting engineer of New York, presented a paper on "The Distillation of Coal." In the first stages of by-product coke making, the attention of producers was centered on making the best possible coke, with by-products a side issue. Now the process has been worked out to obtain the best qualities also out of the by-products.

Industrial Men in the Day's News

Capt. William E. McKay, Elected Chairman of the Mystic Iron Works

COMBINING the qualities of student and executive, he has risen rapidly in the industrial field. Starting as an officer in the navy, he turned his attention to gas, oil and pig iron, being successful in all ventures.

HE IS an ardent student of literature having three personal libraries. Golf and farming form two of his chief diversions and recreations.

MODEST, genial and of diversified interests, he is a man of many hobbies and an active director in many companies and organizations.

TRANSITION from a navy officer to a blast furnace operator at first thought appears unusual, yet Capt. William E. McKay started his naval career serving under Capt. George Dewey in 1885, and from this point in logical sequence has stepped from one enterprise to another, until today his chief business interest is the new blast furnace of the Mystic Iron Works at Everett, Mass., of which company he recently has been elected chairman of the board.

Captain McKay has the peculiar quality of retaining his interest in nearly everything he enters into, so that as he progresses from one enterprise to another, he merely adds the new activity to his life without dropping the old. His education, which among other things included graduation from the United States naval academy, Annapolis, Md., gave him an engineer's training, so that it was not unnatural for him, after he had been honorably discharged from the navy in 1887, to join the engineering staff of the Bay State Gas Co. of Massachusetts. A few years later he became assistant engineer of the Boston Gas Light Co. and in 1905 was appointed engineer of construction of the Boston Consolidated Gas Co.

During this time, while officially out of the navy, he kept his contact through the Massachusetts Nautical school, of which institution he has been commissioner for 20 years. Also during many years of his greatest industrial activity, he was captain and chief of the naval brigade of Massachusetts.

During the last 15 or 18 years his organizing and executive ability has had full swing, and many successful companies now operating in Massachusetts owe their existence to his vision and initiative. He was elected vice president and general manager of the New England Gas & Coke Co. in 1910, and without giving up this interest, became some years later vice president of the New England Fuel & Transportation Co., which position he still holds.

During the war he was largely responsible for the existence of the New England Mfg. Co., of which he was president. This company manufactured explosives for the United States government and for nearly all of the allies. When the business of this company commenced to subside shortly after the armistice in 1918, Captain McKay seemed to feel the need of further activity. He became interested in the Beacon Oil Co. as a refiner and distributor of gasoline, oil and oil products. He was president of this company from its start in 1919 until last year, at which time the company with its subsidiaries had spread to nearly all parts of New England.

Nearly 20 years ago, when the question of building a blast furnace at or near Boston was first suggested, Captain McKay opposed the project on the ground that the conditions of furnace operation were not propitious. The idea of this furnace construction was constantly in his mind, however, and he was instrumental in reviving the plan a few years ago. When the Mystic Iron Works was definitely organized in 1924, he was appointed president. This company receives much of its raw material and ships a fair proportion of its product by water so that Captain McKay's business activity still is linked with the life of the high seas which he enjoyed so much in his youth.

One of his chief hobbies is his summer home and farm on Nantucket island. Here he finds, as he probably could nowhere else today, the lingering atmosphere and tradition of the early seafaring folk of New England, from which stock he is a descendant. During leisure hours, which he always manages to find despite his business

enterprise which would seem to require the full time of two men, he turns farmer, raises potatoes, mows hay and takes long tramps over the open moors of Nantucket.

He is a great reader and his three libraries include not only technical works, but much of history, drama and general literature. He is also an art fancier, a collector of gems and intaglios from all over the world. His collection of tassie gems is one of unusual distinction.

He is a golf enthusiast and a member of many societies and clubs. He was president of the New England Association of Gas Engineers in 1903 and 1904, president of the Guild of Gas Managers from 1907 to 1909, and president of the American Gas institute in 1916. He is a quiet unassuming man, yet one of quick decisions.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

FRANCIS B. FOLEY has been made superintendent of the research department of the Midvale Co., Philadelphia. He graduated from Girard college in 1904, was employed successively at Midvale from 1904 to 1917, as assistant at the university of Minnesota from 1917 to 1918, as metallurgist for the United States bureau of mines from 1918 to 1924 and as metallurgist for the Lucey Mfg. Corp. 1924 to 1926. Mr. Foley was engaged in the investigation of the production of ferrromanganese in the blast furnace in connection with the war material investigation during 1917-1918. He studied and wrote on the "flake" phenomenon in gun steel during the war. He collaborated with Henry M. Howe in an investigation of the effect of variations in heating and cooling on the physical properties of carbon steel until shortly before the latter's death.

Mr. Foley is a member of several committees of the national research council. He is a member of the iron and steel committee of the American Institute of Mining and Metallurgical Engineers, a member of the American Society for Steel Treating, the American Petroleum institute and the American Iron and Steel institute.

* * *

S. E. Gill has been appointed salesman and engineer in the Atlanta district of the Thew Shovel Co., Lorain, O. He will specialize in the shovel, crane and dragline field.

* * *

W. M. Bastable, formerly with Wilson Welder & Metals Co., Hoboken, N. J., manufacturer of welding machines and welding wire, has joined the Electric Welder Controller Co., New York.

* * *

J. P. Orum has been made superintendent of the Bessemer rolling mills of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., being promoted from assistant superintendent. F. U. Harris was promoted to assistant superindent. Mr. Orum came to Bessemer 13 years ago from Ohio.

* * *

O. J. Shields, formerly connected with the Rock Island Mfg. Co., Rock Island, Ill., has been appointed sales manager for the central western district of the Holland Mfg. Co., Erie, Pa., manufacturer of vises, with offices at 180 North Wacker drive, Chicago.

* * *

O. M. Olsen, field engineer for the U. S. Silica Co., Chicago, has joined the American Foundry Equipment Co., Mishawaka, Ind., in the capacity of consulting field engineer and direct representative of Verne E. Minich, president. For many years Mr. Olsen was identified with the *Chicago Daily News*, *Chicago Tribune*, Shuman Advertising Co. and the U. S. Silica Co.

* * *

Edward A. Permar now superintendent of the foundry, Scranton Pump Co., Scranton, Pa., had served as an apprentice patternmaker at the Diamond State Steel Co., Wilmington, Del., advancing to production manager. For a time Mr. Permar was production manager for the Roxbury Steel Co., Boston, and foundry superintendent for M. W. Kellogg Co., Jersey City, N. J.

* * *

Harrison Hoblitzelle has been elected vice president and director of the Commonwealth Steel Co., St. Louis. Mr. Hoblitzelle, who is 30 years old, is the youngest executive of any major steel corporation in this district. He is the son of the late George K. Hoblitzelle, one of the organizers of the company, and at the time of his death its vice president and general manager. Mr. Hoblitzelle started with the company eight years ago in a minor position after graduating from Cornell university in 1917. Before his election as vice president he was director of purchases, and his work will continue largely in the purchasing end.

* * *

B. F. Bart, until recently district sales manager of the A. O. Smith Corp., Milwaukee, manufacturer of pressed steel products, with his headquarters in Los Angeles, has been transferred to the home office as assistant manager of the oil field division. After a metallurgical engineering course at Penn State university, he was with the National Tube Co., and later was in charge of steel distribution of the American Iron and Steel institute. For over five years preceding his connection with the Smith corporation, Mr. Bart was New York district sales manager for the Standard Seamless Tube Co.

Edward A. Livingston succeeds Mr. Bart as Los Angeles district office supervisor.

* * *

James N. Keenan, formerly chief engineer of the H. H. Robertson Co., Pittsburgh, has joined the American Institute of Steel Construction's corps of field engineers. C. Alexander Miller, formerly of the faculty of the Case School of Applied Science, Cleveland, some weeks ago entered the employ of the institute as the first member of the corps. Mr. Keenan has been engaged actively in construction operation since his graduation from the Cornell School of civil engineering in 1909. Prior to his service as chief engineer of the Robertson company, manufacturer of building material specialties, Mr. Keenan was engaged in subway construction in New York.

Mr. Miller comes to the American Institute of Steel Construction after 17 years' experience in the construction field as draftsman, contracting years he was in charge of designing

engineer, and teacher. For several years he was in charge of designing all offices and factory buildings for the National Lamp Works of the General Electric Co. Mr. Miller is an associate member of the American Society of Civil Engineers.

* * *

D. E. Anderson has been appointed sales engineer for the Bohn Aluminum Co., Detroit. He formerly was with the Cadillac Motor Car Co., Detroit.

* * *

J. G. Stromp has been made general sales manager of the J. E. Moss Iron Works, Wheeling, W. Va., structural steel fabricators.

* * *

Charles E. Skinner has been elected

ORRIN H. BAKER
Recently Appointed Assistant Sales Manager in Charge of Rail Division, Illinois Steel Co.

chairman of the Engineering Standards committee. Charles Rufus Harte has been elected vice chairman. The new officers are to serve during 1927.

* * *

Edwin H. Brown, formerly engineer of the steam turbine department Allis-Chalmers Mfg. Co., Milwaukee, has been appointed assistant manager of that department.

* * *

Edward B. Holmes, president of the E. & B. Holmes Machinery Co., Inc., Buffalo, has been appointed a member of a special commission which will draw a new charter for the city of Buffalo.

* * *

Howard Coonley, president of the Walworth Co., Boston, has been made chairman of the board of directors of Bearium Bearings Inc. Other officers of the Bearium company are: Henry G. Pagani, president and general manager; H. Maynard Rees, vice president; F. A. Robertson, vice president in charge of sales, and W. H. Judy, vice president and chief engineer.

* * *

William A. Harmon has been appointed foundry superintendent of the Crompton & Knowles Loom Works, Worcester, Mass., to succeed the late T. E. Cunningham. Mr. Harmon has been with the company 20 years.

* * *

P. L. Getzinger, for a number of years in the tool steel business, and recently with the Kinite Co., Milwaukee, has joined the sales forces of Ziv Steel & Wire Co., Chicago, maker of tool steel.

* * *

Stewart M. Bunting, formerly sales manager, miscellaneous department, Niles-Bement-Pond Co., New York, and associated companies, after Jan. 1 will be connected with Smith, Booth, Usher Co., Los Angeles.

* * *

Robert S. Glenn, manager of the New York store of the Cleveland Twist Drill Co., has been appointed assistant to the president, Jacob D. Cox, Jr., with headquarters in Cleveland. The appointment was effective Dec. 1.

Oliver B. Hansen, who has been representative in the southeastern territory with headquarters in Atlanta, Ga., has been appointed to succeed Mr. Glenn at New York.

Irving P. Farnum, for several years representative covering one of the territories served by the Chicago store of the Cleveland company, has been appointed representative for the southeastern territory, succeeding Mr. Hansen.

* * *

Charles T. Whitney has been appointed district sales manager at Philadelphia for the Treadwell Engineering Co., Easton, Pa., manufacturer of electric steel and gray iron castings, rolling mill and other machinery. His offices will be at 1011 Chestnut street, Philadelphia.

* * *

A. W. Scarratt has been appointed assistant chief engineer of the Hyatt Roller Bearing Co., Newark, N. J. For over 13 years prior to joining the Hyatt organization he was with the Minneapolis Steel & Machinery Co., Minneapolis. Prior to that he was with the Twin City Rapid Transit Co. for eight years.

* * *

Joseph F. Ward of the Norton Co., Worcester, Mass. has been elected president of the Worcester Traffic association. Other officers of the association are: Clifford W. Packard, Curtis & Marble Machine Co., first vice president; Raymond W. Higgins, Baldwin Chain & Mfg. Co., second vice president, and Ernest E. Opitz, the Norton Co., secretary.

* * *

Charles D. Herbert has been appointed district sales manager for central New York state territory of the Reliance Electric & Engineering Co., Cleveland, manufacturer of electric motors. His headquarters will be in the Onondaga Bank building, Syracuse, N. Y. Mr. Herbert has been with the Reliance company since his graduation from Pennsylvania State college.

* * *

Stanley C. Hope, for several years

WILLIAM I. HOWLAND JR.
Recently Appointed Assistant Sales Manager in Charge of Bar Division, Illinois Steel Co.

European representative of the Gilbert & Parker Mfg. Co., Springfield, Mass., has been elected second vice president of the company, this being a new office in the corporation. Other officers named at the recent annual meeting are: R. H. McNall, president; C. C. Ramsdell, vice president; W. T. Raynor, treasurer, and P. H. Dills, assistant treasurer.

* * *

Paul Ackerman has been appointed engineer, service department, Timken Roller Bearing Co., Canton, O., with all service work in the automotive, industrial and steel mill divisions coordinated under his direction.

J. H. Ridge has been appointed branch manager at Pittsburgh for the Timken Roller Bearing Service & Sales Co.

G. G. Weston has been made branch manager at Omaha, Nebr. for the Service and Sales company.

British Resumption Retarded

High Fuel Costs Imposing Handicap on All Works Except Those Controlling Supplies —Many Pig Iron Purchases Made in France—British Steelmakers Negotiating to Join Entente—General Quota for First Quarter Reduced

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Dec. 14.—(*By Cable*)—High prices of fuel are retarding the resumption of iron and steel plants. The majority of those starting up own their coke plants, others are finding it difficult to obtain fuel at reasonable costs. Heavy steel still is scarce, and buyers generally are following a waiting policy. The Welsh tin plate mills are operating at 70 per cent of capacity.

Pig iron made in France is obtainable at £5 5s ($25.46), and many purchases are being made from that source. Pig iron output in Great Britain in November totaled 12,000 tons, with only seven furnaces in blast, compared with a production of 13,100 tons in October, and 539,100 in April, the month before the beginning of the coal strike. The output of steel ingots and castings in November was 90,000 tons, against 94,200 tons in October, and 661,000 tons in April. Iron and steel imports amounted to 422,679 tons in November, 398,200 tons in October, and 261,800 tons in April, while exports in November were 166,363 tons, in October 194,100 tons and April 313,000 tons.

British steel interests are negotiating to join the European steel entente, and are reported to be asking for a quota of more than 10,000,000 tons. The entente has reduced the total quota output of its own members by 150,000 tons for first quarter.

The Belgian market is quiet. German producers report slackening export demand, but good domestic sales.

Sir W. G. Armstrong, Whitworth & Co., British steelmakers, engineers and shipbuilders, have issued a circular to creditors asking for a moratorium. Iron and steel issues are sympathetically weak.

British Works Ready for Early Resumption

BIRMINGHAM, Eng. (*European Staff Service*)—A strong feeling of optimism was a feature at all British markets this week. It is commonly considered that the coal dispute has entered on its last stages and a matter of great importance to the iron and steel trade is the decision of the government to remove coal restrictions governing the supply to works and domestic consumers. For the moment, however, export of coal is not yet to be permitted. Railway sidings up and down the country are congested with trucks of coal, and the government's decision will have the effect of releasing this fuel for commercial use and at the same time collieries which are practically standing for the want of these trucks will be able to dispose of stocks.

Sterling $4.85

The iron and steel trades, however, are not inclined to resume work at the present high price of fuel and until some easing is apparent many works will remain idle.

Little British steel is being made and prices where any can be obtained are generally a few shillings over the association figure. For joists and sections £7 17s 6d ($38.20) is quoted and £8 10s ($40.62) for plates. Constructional engineers are daily receiving inquiries which they find impossible to handle owing to scarcity of fuel. Continental steel is a little easier, but the situation in regard to

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Dec. 13	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3, Silicon 2.50-3.00	$26.68	5 10 0*	$21.22	4 7 6	$21.22	4 7 6	$21.22	4 7 6
Basic	25.46	5 5 0	21.58	4 9 0	21.58	4 9 0	20.61	4 5 0
Basic-bessemer	24.25	5 0 0†	18.19	3 15 0	18.19	3 15 0	18.19	3 15 0
Hematite, Phosphorus 0.02-0.05	22.43	4 12 6	29.67	740*	.....	.....	21.34	4 8 0
SEMIFINISHED STEEL								
Billets	$32.74	6 15 0	$25.71	5 6 0	$25.71	5 6 0	$25.68	5 6 0
Wire rods	43.65	9 0 0	29.71	6 2 6	29.71	6 2 6	29.71	6 2 6
FINISHED STEEL								
Standard rails	$37.58	7 15 0	$29.10	6 0 0	$29.10	6 0 0	$29.10	6 0 0
Merchant bars	1.73c	8 0 0	1.22c	5 11 0	1.22c	5 11 0	1.32c	6 0 0
Structural shapes	1.46c	6 15 0	1.21c	5 10 6	1.21c	5 10 6	1.29c	5 17 0
Plates, ship, bridge and tank	1.68c	7 15 0	1.40c	6 7 6	1.40c	6 7 6	1.54c	7 0 0
Sheets, black, 24 gage	2.38c	11 0 0	2.53c	11 10 0	2.53c	11 10 0	2.42c	11 0 0
Sheets, galvanized, 24 gage, corrugated	3.68c	17 0 0	5.04c	2,800*	.....	.....	3.74c	17 0 0
Bands and strips	2.38c	11 0 0	1.51c	6 17 6	1.51c	6 17 6	1.54c	7 0 0
Plain wire, base	2.11c	9 15 0	1.57c	7 2 6	1.57c	7 2 6	1.54c	7 0 0
Galvanized wire, base	2.76c	12 15 0	2.04c	9 5 0	2.04c	9 5 0	2.09c	9 10 0
Wire nails, base	2.06c	9 10 0	1.73c	7 17 6	1.73c	7 17 6	1.67c	7 12 0
Tin plate, base box 108 pounds	$ 5.34	1 2 0	.....	.....	.....	.....	$ 6.79	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs	Francs	Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$29.10	6 0 0	$24.06	600(2)	.....	675	$19.55 85
Basic pig iron	25.46	5 5 0	23.66	590(1)	.....	650	20.24 88
Furnace coke	13 34	2 15 0	7.78	194	.....	230	4.95 21.50
Billets	32.74	6 15 0	32.72	815	.....	800	27.49 119.50
Standard rails	1.84c	8 10 0	1.62c	900	.....	1,000	1.46c 140
Merchant bars	1.89c	8 15 0	1.59c	880	.....	1,025	1.40c 134
Shapes	1.68c	7 15 0	1.51c	840	.....	1,000	1.37c 131
Plates, ship, bridge and tank	1.89c	8 15 0	1.76c	980	.....	1,150	1.55c 149
Sheets, black, 24 gage	2.49c	11 10 0	3.20c	1,775	.....	2,100	2.35c 225
Sheets, galvanized 24 gage, corrugated	3.84c	17 15 0	4.95c	2,750	.....	3,000	3.65c 350
Plain wire	2.11c	9 15 0	2.97c	1,650	.....	1,600	2.03c 195
Bands and Strips	2.49c	11 10 0	2.07c	1,150	.....	1,250	1.62c 155

***Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £1 15s 0d ($8.49) f. o. b. Ferromanganese £16 0s 0d ($77.60) f. o. b. German ferromanganese £15 10s 0d ($75.18) f. o. b.**

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

deliveries has been aggravated this week by the closing of an important dock in South Wales owing to congestion.

Rail mills at Barrow have enough work to keep them occupied for several months. Makers of hoops also have a period of activity ahead, although the Barrow works have been idle for a few days owing to difficulty in obtaining billets from the continent. Foreign billets are now obtainable at £6 7s 6d ($30.91) and sheet bars at £6 12s 6d ($32.12). Some steelmakers and producers of manufactured iron in Scotland are making tentative plans for a restart, but others are disposed to wait until supplies of fuel and raw material can be assured. Plates are quoted £8 5s ($40.01) to the home consumer and £8 2s 6d ($39.40) for export, while for sections the price is £7 17s 6d ($38.20) home and £7 12s 6d ($36.97) export. The output of rerolled steel is being quickly absorbed.

The galvanized sheet trade is experiencing a slight lull in activity which is quite a usual occurrence at this end of the year. Prices have eased a little to £17 10s ($84.87) and sheets will probably become cheaper still as supplies of fuel increase. Makers will only be too pleased to make reductions so that they may cope the better with foreign competition which at the moment is particularly keen with America. Good contracts have been booked with the Far East and the Malay Peninsula but American competition has been met with in the West Indies and on the Mediterranean. Business in these markets is expected to expand with a reduction in price. The slight reduction in foreign billets has helped galvanized sheet makers to some extent.

The improved coal position is responsible for a little revival in the demand for tinplates and a steady trade is being done. The price for prompt delivery is £1 5s 3d ($6.12) to £1 5s 6d ($6.18). Some inquiry has been received from Australia and New Zealand and the continent, although the business involved does not amount to very much. The home trade is still rather quiet. Tinplate bars are nominally £6 15s ($32.73) but most sellers ideas are more in the neighborhood of £7 10s ($36.37). Foreign bars are offered at £6 3s 9d ($30.00).

The scrap market has revived a little as a result of the improved coal situation and a little more business is being done.

British Export Prices Higher in October

London, Dec. 2.—(*European Staff Service*)—Board of trade returns for October 1926 give the average British export prices per gross ton for a certain number of iron and steel products. These prices are compiled from actual contracts which were made several months ago and this accounts for the difference between these quotations and the base prices regularly quoted in our columns.

The following table shows the price of each of the seven principal commodities exported from Great Britain. Compared with those prevailing in the corresponding period of 1925 and in September this year, prices generally were higher.

The price of foundry pig iron was 1s 2d ($0.28) more than in September this year and 15s 9d ($3.78) more than in October 1925. Ferroalloys were £3 9s ($16.71) more than in September this year and £3 3s 7d ($15.41) less than in October 1925. Carbon billets were £5 0s 7d ($24.39) less than in September this year and £11 18s 5d ($57.77) more than in October 1925. Beams were 11s 7d ($2.78) less than in September this year and £1 11s 8d ($7.65) more than in October 1925. Galvanized sheets were 10s 10d ($2.60) more than in September this year and 10s 7d ($2.54) less than in October 1925. Tinplates were 11s 7d ($2.78) more than in September this year and £1 14s 2d ($8.25) more than in October 1925. Plates were 3s 3d ($0.78) less than in September this year and £2 19s 7d ($14.40) more than in October 1925.

October 1926

	£	s	d	$
Foundry pig iron	4	14	9	22.94
Ferroalloys	15	2	0	73.23
Carbon billets	25	11	5	123.99
Beams	10	16	5	52.44
Galvanized sheets	18	3	5	88.12
Tinplates	22	12	2	106.70
Plates	13	14	9	66.59

Belgian Export Demand Falls Off

BRUSSELS, Dec. 2.—(*European Staff Service*)—The Belgian iron and steel market is spotty. Improvement in the coal struggle which has paralyzed the English metallurgical industry since the beginning of May has caused loss of export demand for Belgian products. The price of bars is being forced downward, whereas shapes and plates are somewhat firmer. German competition is keen. The more important interests refuse to make concessions as they have well filled order books, but small mills will soon need tonnage and do not hesitate to cut prices when necessary. The coke shortage is becoming serious and the Belgian government has placed an embargo on coal exports.

Foundry pig iron is firm and difficult to obtain. Domestic demand is brisk and continues to exceed capacity of furnaces. The export price for No. 3 foundry, 2.50 to 3.00 per cent silicon and over 1.00 per cent phosphorus, now averages £4 3s ($20.10) per metric ton f.o.b. Antwerp. Domestic orders calling for 20 to 30 tons are being placed at 675 francs ($18.75) to 680 francs ($18.90) f.o.b. furnace.

Buyers of semifinished steel products are demanding price concessions. The demand for export to England has fallen off sharply. Basic bessemer blooms 8 inches and over range from £4 12s 6d to £4 15s ($22.45 to $23) f.o.b. Antwerp. Billets are impossible to find. German mills quote billets 2½ to 4 inches at £5 6s ($25.65),

Franc—$0.0278

but practically no orders are being placed. Sheet bars bring £5 9s ($26.40) and skelp ranged from £5 17s 6d to £6 ($28.50 to $29.10).

Signs of softness are appearing in the finished steel department. The fact that coal miners are resuming work in England has caused a reaction in Belgium and prices already have begun to weaken in certain quarters. Mills having considerable backlog tonnage still quote merchant bars for export at £5 15s ($27.85), but no sales were recorded at this figure at the last meeting of the Brussels metals bourse. Several orders were placed at prices ranging from £5 10s to £5 12s ($26.60 to $27.10). Structural shapes have moved up 2s to £5 12s ($27.10), due to a heavy inquiry from London.

France Sets New Mark

Paris, Dec. 2.—(*European Staff Service*)—French producers of iron and steel again broke all previous records of production during October. October output of pig iron was 815,694 metric tons, against 785,070 tons in September and 813,503 tons, the previous high mark reached in August. November 1 there were 154 furnaces operating, as against 153 Sept. 30; there were 32 furnaces in working order and 31 either under repair or in course of construction. The October output included 609,927 tons of basic bessemer pig iron, 147,235 tons of foundrdy pig iron, 17,993 tons of special grades and 3585 tons of acid bessemer pig iron.

Output of steel ingots and castings was 741,748 metric tons, compared with 706,128 tons in September and 725,611 tons, the preceding high mark reached in March. October output included 728,547 tons of ingots and 13,201 tons of castings. From the point of view of method fabrication the October output was composed of 510,365 tons of basic bessemer steel, 213,943 tons of openhearth steel, 8599 tons of electric steel, 6315 tons of acid bessemer steel and 2526 tons of crucible steel. The following table gives figures for the first ten months of 1926 as compared with the monthly averages of the three preceding years and 1913, in metric tons.

Mon. ave.	Pig iron	Steel ingots and castings
1913	433,900	390,580
1923	452,650	425,795
1924	637,660	575,540
1925	705,985	617,920
1926		
Jan.	762,810	660,566
Feb.	706,514	630,348
March	772,416	725,611
April	767,825	683,269
May	782,599	667,149
June	777,928	693,772
July	791,542	718,109
Aug.	813,503	704,447
Sept.	785,070	706,128
Oct.	815,694	741,748

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

STEAM POWER & HEATING CORP., Chicago, manufacturer of boilers, engines and industrial heating units, recently incorporated, is headed by E. W. Schulz as president, and E. C. Jacobson secretary and treasurer. A new type of steam generator will be manufactured for pressure to 1500 pounds per square inch and 1000 degrees temperature will be manufactured, and a four-cylinder uniflow engine. The company will be in production in about three months.

* * *

CORCO OIL REFINING CORP., Shreveport, La., has bought from the Graver Corp., East Chicago, Ind., two high-pressure cracking process units for its refinery at Shreveport.

* * *

STANDARD CAR WHEEL CO., Cleveland, has been bought by the Griffin Wheel Co., Chicago, a subsidiary of American Steel Foundries. The Griffin company has plants for the production of cast iron car wheels in various other cities.

* * *

SEAMLESS STEEL EQUIPMENT CORP., New York, recently incorporated, will devote its energies to the importation and sale of seamless steel products, particularly those adapted to the use of oil companies in cracking equipment, power plants and chemical industries.

* * *

WILLIAMS FORM CLAMP CO. INC., Chicago, has been reorganized, changing from a Delaware to an Illinois charter. It manufactures standard form clamps. D. F. Crimmins is president, in charge of production; O. M. Lux vice president in charge of sales; O. H. Hawk secretary and J. E. Novak treasurer.

* * *

ILLINOIS STOKER CO., Alton, Ill., manufacturer of stokers, has been consolidated with the K-B Pulverized Corp. under the name of the former. The product of the latter will be added to the line of the Illinois Stoker Co. The New York office of the company will be at 1948 Grand Central Terminal building.

* * *

DAYTON GREENHOUSE MFG. CO., Dayton, O., has bought the plant and assets of the T. J. Callahan Co. of that city and will continue the manufacture of sash operators. Herman F. Gerdes is president and general manager. O. W. Bloom, W. B. Stewart, Joseph Westendorf and John Westendorf are directors.

* * *

DETROIT STEEL PRODUCTS CO., Detroit, has announced the recent opening of a new southeastern branch at Jacksonville, Fla., where headquarters for Florida will hereafter be located. The branch formerly was at Miami, Fla. The branch carries a stock of steel windows. J. E. Rankin is in charge of the branch, assisted by J. J. Clifford.

* * *

BUTLER MFG. CO., Kansas City, Mo., manufacturer of ready-to-erect buildings, tanks and other steel plate products, has bought adjoining land to enlarge its plant to two full city blocks, and recently erected a warehouse addition 76 x 128. It now is adding to its office and administration building at Thirteenth street and Eastern avenue, where it will move its offices from 1326 Grand avenue.

* * *

AMERICAN SIGNS CORP., Kalamazoo, Mich., manufacturer of electric advertising signs, is building additions to its plant to increase production about 50 per cent. This is the second addition during the present year. The company was organized to take over the business of the American Sign Co. which has been in business since October 1908. Frank E. Kelsey is president, Burton C. Wilson vice president and general manager and Fred W. Sutherland secretary and treasurer.

* * *

SERVICE MOTORS INC., Wabash, Ind., has been bought by E. W. Bassick and associates and a corporation will be formed to take over this plant and that of the Commerce Motor Truck Co., Ypsilanti, Mich. Men associated in these companies have been developing a type of final drive for motor trucks and buses and it has been manufactured at the Ypsilanti plant. The Wabash plant will be used for the same purpose. G. L. Gillam, president of Service Motors Inc. will be an officer of the new company and will be in charge of operations. W. R. Bassick, president of the Commerce Motor Truck Co. will be an officer and director and M. A. Holmes, for many years sales manager of the Republic Truck Co. will be in charge of sales.

* * *

THE Underwood Computing Machine Co. has voted to buy the plant which it is now using at Hartford, Conn. This factory, which was erected in 1917, is 317 feet long, 50 feet wide and 4 stories in height. The Underwood Computing Machine Co. is a subsidiary of the Underwood Typewriter Co. and ten years ago when it was looking for space, businessmen in Hartford organized the Hartford Industrial Development Co. and in three days raised capital to build the plant without expense for financing. Since that time the stockholders of the Hartford Industrial Development Co., numbering about 400, have netted 7 per cent interest on their investment, and shortly will share in the substantial increase in the value of the property.

Uniform Mechanics Lien Act Prepared

Washington, Dec. 14.—The committee of 13 appointed by Secretary of Commerce Herbert Hoover to draw up a mechanics' lien act to serve as a basis for more uniform state legislation on this subject, has mailed copies of its first tentative draft to several hundred trade associations, labor organizations and individuals who have expressed an interest in the subject.

The tentative draft contains few new departures, practically all of its provisions having been found workable in several jurisdictions. The aim of the committee has been to produce an act which will adequately protect the interests of the workers and others concerned in construction as well as the interests of the owner and those who finance building operations, and to distribute as equitably as possible among the groups the burden of securing such protection. The committee has requested that all comments be forwarded to its secretary before Jan. 31, 1927.

Trade Body Inquiry Is Proceeding Slowly

Washington, Dec. 14.—Discussing the so-called open price association investigation which it is making the federal trade commission in its annual report says;

"The inquiry into open price associations was instituted in response to senate resolution 28. On account of the doubt as to the commission's authority to proceed under the terms of the appropriation act for the fiscal November, 1925, the inquiry was not begun until after approval of the attorney general.

"Questionnaries were sent by the commission to several thousand trade associations requesting them to report as to the various branches of activity in which they were engaged and especially to indicate the characteristics of their statistical activities. These schedules are being used as the basis for the field work on open price associations. Work on other types of trade associations is limited to what is necessary in order to elucidate the problems indicated in the senate resolution. The work to be done in the field is extensive, but on account of shortage of funds its was necessary to proceed slowly.

Zinc Figures Nearer

St. Louis, Dec. 14.—The adjustment committee of the American Zinc institute at its meeting here last week agreed to put into practice a resolution presented by the miners' subcommittee last June, providing for an interchange of statistical information between zinc smelters and producers.

Since presentation of the resolution it has been the basis of much dispute between the subcommittees and the adjustment committee. But these differences were cleared up at the recent meeting and a subcommittee appointed to prefect the proposed plans.

Reaffirms Schedules

Washington, Dec. 7.—Simplified practice recommendation No. 28, for sheet steel; No. 29, for eaves trough and conductor pipe; and No. 30, for terne plate, have been reaffirmed by the standing committees representing these industries, says the simplified practice division of the department of commerce.

A survey made by the committees developed the fact that there was an adherence of approximately 95 per cent covering terne plate and eaves trough and conductor pipe; also about 90 per cent adherence to the recommendation for sheet steel. The adherence to the No. 28 gage roofing has increased about 5 per cent over last year.

Tractor Shipments Drop

Washington, Dec. 14.—Electric industrial truck and tractor shipments in November totaled 123, compared with 132 in October, according to reports of nine leading manufacturers to the department of commerce. Other comparisons follow:

	Tractors	Domestic All other types	Exports
1925			
Quarter ending March 31	45	259	41
Quarter ending June 30	49	280	50
Quarter ending Sept. 30	57	286	12
Quarter ending Dec. 31	41	295	25
1925 Total	192	1,120	128
1926			
Quarter ending March 31	44	310	17
Quarter ending June 30	50	281	32
Quarter ending Sept. 30	39	258	8
January, 1926	21	86	4
February	15	96	5
March	11	128	8
April	17	90	4
May	12	87	9
June	21	104	19
July	15	95	1
August	14	81	2
September	10	82	5
October	18	98	18
November	18	97	17
Total (11 mos.)	172	1,032	93

Take Up Billet Steel

Washington, Dec. 14.—A preliminary conference to a general conference of manufacturers of new billet steel will be held here Dec. 17 under the auspices of the national Metal utilization committee of the dapartment of commerce. The conference has been called to take up unification of specifications. A meeting was held last year but was not successful at that time.

Upholds Steel Bar Rate to Lynchburg

Washington, Dec. 14.—A proposed report has been prepared for the interstate commerce commission by Examiner C. J. Peterson in which he did not find unreasonable charges collected on steel bars in carloads from Youngstown, O., to Lynchburg, Va. and he did not find that the complainants were damaged by reason of any undue preference that may have existed. He suggests that the complaint be dismissed. This proposed report was in the case of the traffic bureau of the chamber of commerce of Lynchburg, Va., against the Baltimore & Ohio railroad.

Bonus and Turkeys for Golden Rule Workers

Birmingham, Ala., Dec. 13.—The American Cast Iron Pipe Co., announces the 1926 cash bonus for regular service will be paid employes of the operating department Dec. 24. The schedule is $25 for working every day, $20 for every day except one, $15 for every day except two, $10 for every day except three and $5 for every day except four. Each employe on a daily wage rate who worked every day of the year will receive a turkey in addition to $25. Some other extra compenstation also will be distributed. The plant will be closed for a week at the holidays. The plant gained distinction several years ago when employes were admitted to representation on the board of directors.

Obituaries

VICTOR FROMENT, formerly a partner in Froment & Co., New York, iron and steel mill agents, died suddenly of heart disease at his home in Warrenton, Va., Dec. 11, just after returning from a hunting trip to North Carolina. He was aged 47. He was a brother of Eugene McKay Froment, proprieter of Froment & Co.

* * *

George Metzger, president of the Toledo Stove & Range Co., Toledo, O., died Dec. 7 at his home there, aged 79 years.

* * *

George W. Neill, for many years active in the foundry business in Portsmouth, O., died Dec. 12 at his home there. He was born May 25, 1851 and while in his teens entered the stove foundry business with his father, succeeding to the presidency of the company in 1889.

* * *

Henry V. Jones, member of Chase Parker & Co., Boston, large hardware dealers, recently died at his home in Brookline, Mass.

* * *

John F. O'Neil, former owner of the Lake Erie Engineering Works, Buffalo, died recently at his home in St. Louis. As a young man he went from New York state to St. Louis where he formed the Fulton Iron Works. He returned to Buffalo about 1916 and with others purchased the old Hammond & Coon plant for making sugar cane machinery.

Machinery

Postponement of Purchases Results in Dullness in the Market—Funds for Equipment Appear Exhausted—Illinois Steel Co. Buys

DULLNESS characterizes the machine tool and equipment market in practically all important centers, however, the declining orders are declared to be seasonal. Inquiries are of fair volume, but dealers experience resistance in closing for various reasons, principally exhaustion of 1926 budgets. The railroads, for example, have spent funds available for this year and practically are out of the market. Smaller dealers probably are less affected by the decrease in orders than the large houses. Illinois Steel Co. has purchased some 60 miscellaneous tools against its list issued some time ago. Considerable used equipment was involved. Automotive interests generally are doing little buying, being tooled up for much higher production than demand necessitates.

New York, Dec. 14.—Seasonal dullness is reflected in the local machine tool market. While pending inquiry is of fair volume, the tendency to hold action over until next year is becoming increasingly pronounced. One notable instance is New York Central railroad, and another is General Electric Co., Schenectady, N. Y. The largest pending list is that of the Standard Oil Co. of New Jersey, involving about 15 miscellaneous machines, including punches and shears.

A leading order booked by an eastern concern calls for nine machines for Illinois Steel Co., Chicago. This business included two engine lathes, three radial drills, two boring machines and three planers, all of which went to the Niles-Bement-Pond Co. Cleveland, Chicago, Cincinnati & St. Louis closed on a 16-inch geared head lathe to the Pratt & Whitney Co., while Reading Co. is inquiring for some equipment including three turret lathes. Among recent awards are three hand milling machines and a profiler for a magneto company at Sidney, N. Y.; three bench drils for a concern at New Haven, Conn., and a 13-inch geared head lathe for a company in Walton, Mass.; all going to Pratt & Whitney Co. This seller also closed on an automatic milling machine for a brass company in Detroit, a power miller for a concern in Los Angeles and a bench miller for a company in the same city.

Chicago, Dec. 14.—With December half gone, the figures of machine tool interests in the Chicago market for the past 12 months show that 1926 sales exceeded 1925 by some 15 or 20 per cent. The month is closing rather slowly, sales during the past week generally showing little activity. In one or two cases, however, December will prove better than November because of awards from Illinois Steel Co. list. Stock-taking and the accummulation of cash reserves are keeping down inquiries until the first of the year. Practically all the railroads appear to have exhausted machinery budgets for the current year. The only new railroad inquiry out is from the Santa Fe for a portable pipe machine. Bendix Brake Co., South Bend, Ind., is seeking several used lathes, while Illinois Steel Co. also is inquiring for a 13-inch power saw for its South Chicago works. Prices are strong, a current advance of 10 per cent on boring mills by a New York maker substantiating rumors of further increases. Used tools also are in good demand for the time of the year. The crane market continues to display sluggishness, although locomotive crane activity is picking up somewhat.

Pittsburgh, Dec. 14.—Machine tool sellers report the first half of December as relatively quiet, with only a few single tool orders materializing. Inquiries are not numerous, although a number of propositions still are hanging fire, including the list of American Sheet & Tin Plate Co. for Gary, Ind. Baltimore & Ohio railroad issued a small list for Martinsburg, W. Va., including drill press, shaper, etc., and Pennsylvania has a new list out covering five items of plate-working machinery, including two large punches and shears for Altoona, Pa. car works. It has not done anything as yet against its earlier list. Westinghouse Electric & Mfg. Co. added two or three small items to its list, including a milling machine, two saws, etc., and shortly will take action. Cranes are quiet and the present dearth of orders is scheduled to last until after the holidays.

Boston, Dec. 14—Machine tool sales are holding up well in New England despite the inventory season. A printing press manufacturer bought two gear cutters and some other tools. Gillette Safety Razor Co., Boston, bought several tools including a milling machine. Another Boston manufacturer bought four machines against a list of seven, and is expected to close on the additional three this week. Prices for the most part remain unchanged. One manufacturer of boring machines announces an advance of about 10 per cent on four sizes. Used tools have been more active than in several weeks. A Milford, Mass., manufacturer bought two large used presses. A Boston dealer reports having placed 12 used tools during the week. Inquiry is listless but some interest in 1927 requirements is developing. A school in Woonsocket, R. I., has prepared a list of tools wanted next year.

Cleveland, Dec. 14.—The usual preholiday slump appears to have affected all machine tool interests in this territory so far as actual sales are concerned. Inquiries are good and in some cases better than they were at this time a year ago, thus bespeaking improved activity after the first of the year. Where equipment is not needed for immediate use, buyers are insistent in delaying action until after Jan. 1, the excuse being the exhaustion of 1926 funds. Manufacturers report orders well scattered geographically and industrially with the exception of the automobile industry which is inactive pending the introduction of new models. A local manufacturuer of turret lathes has closed orders involving some 25 turret lathes with a Detroit automobile maker producing two lines of cars. Used tools are feeling the effect of the downward market.

CRANE ORDERS PLACED

Sixteen 2-ton handpower cranes with electric hoists for Nickel Plate railroad, through Manning, Maxwell & Moore Inc., to Chisholm-Moore Mfg. Co.

Two 18-ton steam locomotive cranes for International Creosoting & Construction Co., Texarkana, Ark., to Orton Crane & Shovel Co.

Among single awards were: Ditcher for Louisville & Nashville, to American Hoist & Derrick Co.; steam shovel for Honochitto Lumber Co., a southern concern, to American Hoist & Derrick Co.; 5-ton electric traveling crane for Rensselaer Valve Co., Troy, N. Y., to unnamed builder; 8-ton electric crane for Clifton Paper Mill Co., Clifton, N. J., to unnamed builder; locomotive crane for Boston & Albany, reported going to Industrial Works; 18-ton electric gantry crane for Howard Shipbuilding & Dock Co., Jeffersonville, Ind., to Orton Crane & Shovel Co.; 12-ton steam crawler crane for Edwards Fay & Co., Philadelphia, to Orton Crane & Shovel Co.

CRANE ORDERS PENDING

15-ton used electric crane for American Tube & Stamping Co., Bridgeport, Conn., inquiry issued through Stanley Works, New Britain, Conn.

Steel Probe Improbable

Washington, Dec. 14.—The Shepard resolution (S. Res. 177) which was introduced in the senate at the last session of congress authorizing the appointment of a special committee to inspect, investigate and report on conditions in the steel and aluminum industries has been indefinitely postponed. This resolution was reported adversely from the senate committee on education and labor. It is generally conceded that no action will ever be taken on this resolution.

Class one railroads on Nov. 15 had 98,704 surplus freight cars in good repair and immediately available the American Railway association announces. This was an increase of 10,574 cars compared with Nov. 8.

Waterways Are Called Major Problem

"The development of waterways is the most important problem before our government," said Representative Cleveland A. Newton, St. Louis, in an address before more than 800 members of the Pittsburgh Builders' Exchange at their seventeenth annual dinner, Dec. 9.

"With commerce in America doubling itself every 10 or 12 years, it is outgrowing our transportation facilities," he said. "How are we going to solve this problem? The lakes have helped in the solution, but they have their limitations. The rivers remain as the only way out of the difficulty. Development of the inland waterways is essential to the welfare and economic growth of America.

"As an example of the benefit derived from putting public funds into river improvement, take the Monongahela river. The government spent $17,000,000 in making this stream navigable. Last year $16,000,000 was saved in transportation of coal alone on this river. Rivers offer cheap transportation, but an investment must be made in funds for improvements before any gain can be realized."

Congressman Newton spoke of benefits that will result from the waterways program being undertaken by the government. Improvements on the Ohio, Mississippi and Missouri rivers will make it possible to load barges with steel in Pittsburgh, take them to Kansas City and Omaha, unload the steel and bring back the barges loaded with wheat, corn and other provisions. He stated also that a water route connecting Pittsburgh's industrial district with the Texas sulphur beds could be expected in a few years. Pittsburgh now gets its sulphur by coastal steamers to Philadelphia and then by railroad.

Payrolls for October Show Increase

Washington, Dec. 14.—Reports were received from 216 iron and steel mills by the bureau of labor statistics, which gave their September employment as 288,661 decreasing in October to 288,030. Their payrolls increased 4.5 per cent from $8,720,041 in September to $9,108,170 in October.

The bureau also received reports from 155 structural ironwork plants who gave their September employment as 25,509 decreasing in October to 24,972, a reduction of 2.1 per cent. The payrolls increased 3.5 per cent from $707,818 in September to $732,795 in October.

Forty-six cast iron pipe mills reported their September employment as 15,372 decreasing in October to 15,009 a reduction of 2.4 per cent. The payrolls in these plants also decreased from $363,423 in September to $358,485 in October, 1.4 per cent.

Reports were received from 156 machine tool plants which gave their September employment as 31,950 increasing in October to 32,397. The payrolls increased from $962,690 in September to $1,008,180 in October, 4.7 per cent.

Charge Discrimination

Washington, Dec. 14.—The metal trade department of the American Federation of Labor has filed a petition in the house of representatives with reference to conditions said to exist in the shipbuilding plants of the United States, and seeking to prevent further expenditures of public moneys in industrial establishments that it claims discriminates against trade unions and other workers. The petition was referred to the merchant marine and fisheries committee.

Fearon Foundry Co., Chicago, has increased its capital from $25,000 to $30,000.

Industrial Business Changes

THE MINNESOTA STEEL & MACHINERY CO. has opened offices in the Hearst building, San Francisco, and A. Levin has been appointed district sales representative. M. H. Hanauer, Chapman building, Los Angeles, is contracting engineer for the company on the Pacific coast.

* * *

Pollak Steel Co., Cincinnati, has moved its offices at Cincinnati to the Temple Bar building, Court and Main streets.

* * *

Electric Controller & Mfg. Co., Cleveland, has moved its office at Toronto, Ont., from the Traders Bank building to 415 Metropolitan building.

* * *

Union Mfg. Co., New Britain, Conn., manufacturer of machine tools and gray iron castings, has appointed the Mountain States Rubber Co., Salt Lake City, Utah, its exclusive distributor for chucks in Utah, Arizona, Montana and Nevada.

* * *

Empire Tool Corp., Gloucester, N. J., has absorbed the former tool works and plant of the John M. Rodgers Co., Monmouth and Ellis streets, and will enlarge its production.

* * *

Buhl Aviation Co., successor to the Buhl-Verville Airplane Co., is moving its equipment to Marysville, Mich., near Detroit, where it has leased the former plant of the Illinois Tool Co.

* * *

Stevens, Inc., Atlanta, Ga., manufacturer of refractories, has moved its offices from Atlanta to its works at Stevens Pottery, Ga., consolidating its executive and operating offices.

* * *

Phillips-Buttorff Mfg. Co., Nashville, Tenn., manufacturing hot air furnaces for homes, commercial buildings, schools and churches, has established an agency in Birmingham for sales and service.

* * *

Wheeler-Murray Co., construction and snow-removal equipment, has moved to larger quarters at 329 Ellicott street, Buffalo, and has opened a branch office on South Clinton street, Syracuse, N. Y., in charge of William Birdsall.

* * *

R. K. LeBlond Machine Tool Co., Cincinnati, has appointed the Eccles & Davis Machinery Co., Los Angeles, its representative in southern California. The C. F. Bullotti Machinery Co., San Francisco, will represent the company in northern California.

* * *

The Bayonne Steel Co., Inc., is the new name of the Bayonne Steel Ceiling Co., 219-225 West Nineteenth street, New York. The company manufactures steel sheets, metal ceilings, solder, nails, and conductor pipe among other items.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

ALHAMBRA, CALIF.—C. F. Braun & Co., manufacturer of gasoline absorption plants, is building a machine shop 80 x 118 feet and garage 110 x 129 feet.

EMERYVILLE, CALIF.—New Metal Products Co., Fifty-ninth and Doyle streets, manufacturer of underground tanks for oil and gas storage, will build additions to its shops.

EMERYVILLE, CALIF.—Associated Oil Co., Associated Oil building, is having plans made for a 1-story auto building shop for truck bodies and steel tanks at Fifty-ninth and Green streets.

LOS ANGELES—Hallet Mfg. Co., marine engines and air compressors, will build a plant at Inglewood, Calif., and move its operations there.

OAKLAND, CALIF.—Super Auto Products Co., 104 Olive avenue, San Francisco, manufacturer of piston rings and seals, will build a plant at Thirty-seventh and Magnolia streets.

OAKLAND, CALIF.—New Metal Products Co., Fifty-ninth and Doyle streets, manufacturer of underground tanks, boilers and similar products, has bought adjoining property and will build a 1-story addition.

SACRAMENTO, CALIF.—The county is building a machine shop for repair of its equipment.

SAN FRANCISCO—Pacific Electric Mfg. Co., 5815 Third street, will build a 1-story plant 50 x 100 feet at Carroll and Jennings streets.

DENVER — Grease-Rite Pneumatic Gun Co. has been incorporated to manufacture lubricating devices, with $50,000 capital, by A. J. Kayser, H. M. Vance and W. M. Appel.

BRISTOL, CONN.—New Departure Mfg. Co. is having plans made for a machine shop addition to its plant. Lockwood, Greene & Co., 24 Federal street, Boston, are engineers.

DANIELSON, CONN.—E. H. Jacobs Mfg. Co., manufacturer of textile machinery, will build a branch factory for loom supplies and other equipment at Charlotte, N. C.

SEYMOUR, CONN.—Seymour Hardware & Supply Co. has been incorporated to manufacture hardware by Lester E. Wheeler president, Mildred B. Wheeler secretary and Joseph G. Norris treasurer.

STAMFORD, CONN.—Young & Hartwright, Elm street, are building a 2-story machine shop 40 x 80 feet.

WILMINGTON, DEL.—Hohenau Production Corp., Walter Hohenau president, recently incorporated, will build a plant for the manufacture of hydrogen gas machinery.

BRUNSWICK, GA.—Hercules Powder Co., Dupont building, Wilmington, Del., will build a power house at its plant here.

CHICAGO—American Steel Foundries, 122 South Michigan avenue, has acquired plant and business of the Verona Steel Castings Co.

CHICAGO—S. Savage, 417 South Campbell avenue, oven manufacturer, will build a sheet metal shop at 1906 North Cicero avenue.

CHICAGO—Standard Cap & Seal Co., Fullerton and Racine avenues, manufacturer of metal bottle caps, will build a 1-story addition to its plant, 62 x 140 feet.

CHICAGO—Matchless Metal Polishing Co., 840 West Forty-ninth street, has given contract to Gust Nelson, 6758 Lowe avenue for a 1-story plant 42 x 78 feet.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

CHICAGO—Vit-O-Net Mfg. Co., 4111 Ravenswood avenue, manufacturer of electrical appliances, is building a 2-story plant 60 x 100 feet at 2611 North Ashland avenue.

CHICAGO—Peerless Ice Machine Co., 503 South Jefferson street, C. Kirtzer president, is having plans made for a 1 and 2-story factory and office building at Parnell avenue and Thirty-fifth street.

CHICAGO—Chicago Smelting & Refining Co., 2457 South Loomis street, Hyman Feinberg, manager, is having plans made for a 3-story warehouse 45 x 200 feet at Loomis and Twenty-fourth streets. Charles S. Archer, 6222 Cottage Grove avenue, is architect.

CHICAGO—Organ Pipe Speaker Co., 160 North LaSalle street, room 1320, has been incorporated with 200 shares no par value to manufacture organ pipe radio speakers by Anton B. Michels, Leonard D. Morris and Thomas M. Whitson.

CHICAGO—Eureka Plate Corp. 1940 Michigan avenue, has been incorporated with $3000 capital to manufacture battery plates, batteries and equipment by A. B. Levitt, Jacob Menzo and Harry Schiffman. R. B. Clyde, 37 West Van Buren street, is correspondent.

CHICAGO—Apex Machine Co., 38 South Dearborn street, room 1363, has been incorporated with $5000 capital to do general manufacturing by A. A. St. John, D. J. Huntley, J. B. Eddington, W. A. Freeman and J. T. Stephens. West & Eckhart, First National Bank building, are correspondents.

CHICAGO—Illinois Motive Equipment Co., 35 Wacker drive, suite 772, has been incorporated with $15,000 capital to manufacture equipment for motor vehicles, boats, aircraft and machinery by James D. Elson, Ils S. Elson, and Rose J. Osborne. Parry C. Kinne, 160 North LaSalle street, is correspondent.

CHICAGO—Wandrie Mfg. Co., 4317 North Western avenue, has been incorporated with $25,000 capital to manufacture radio and automobile accessories by Thomas J. Davis, Charles G. Mann, Robert A. Wollet and Louis Wandrie, Tebney, Harding, Sherman & Rogers, 137 South LaSalle street, are correspondents.

CHICAGO—Triangle Engineering Corp., 3022 Archer avenue, has been incorporated with $20,000 capital to manufacture fuel-saving devices, boilers, heating plants and fuel-saving devices by Joseph A. Ahearn, James A. Mallen, John L. Grzena and Archie E. Hillis. Cavanaugh & Pakenham, 40 North Dearborn street, room, 501, are attorneys.

EAST PEORIA, ILL.—Universal Broadcasting Mfg. Co., 935 West Washington street, has been incorporated to manufacture mechanical devices and appliances, heating appliances, by Julius Hammer, August F. Hauser and James G. Bailey.

GALESBURG, ILL.—Midwest Casket Hardware Co., 1067 East Loscy street, has been incorporated with $25,000 capital to manufacture hardware and hardware appliances, casket hardware and trimmings by Henry J. Olsen, Fred Lindgren and A. H. Brostrom. Carney & Nelson, room 210 Peoples Bank building, Galesburg, are correspondents.

QUINCY, ILL.—Sure Shot Trap Mfg. Co., 824½ Main street, has been incorporated with $5000 capital to manufacture traps by S. R. Payne, Henry C. Distlehorst and J. W. Crooks. Nielson & Williams, Blackstone building, are correspondents.

ROCKFORD, ILL.—Central Iron Works, 421 Chestnut street, is building a 1-story addition 60 x 112 feet.

SPRINGFIELD, ILL.—Lokaford Co., 1716 South College street, has been incorporated with $7500 capital to manufacture machinery, appliances and fixtures by H. G. Prigge, Sven Svenson and W. E. Shanklein. Barber & Barber, First National Bank building, are correspondents.

CEDAR RAPIDS, IOWA—Speeder Machinery Corp. is building a 1-story plant 120 x 160

Nine Medals Awarded to Westinghouse Electric

Pittsburgh, Dec. 14.—The executive jury of awards of the sesquicentennial exposition at Philadelphia has voted to the Westinghouse Electric & Mfg. Co. nine awards for its exhibits, including a grand prize for "excellence of products and service to humanity." Notification was received last week from S. C. Simms, secretary of the jury.

The other awards received by the company include one medal of honor, four gold medals and three silver medals. The medal of honor was awarded for outstanding development work resulting in the "OB" watthour meter. Gold medals were given for the osiso-oscillograph, a device for recording the characteristics of electric currents; for farm light and power plant; for the development of the bimetallic thermostatic control switch; and for the excellent construction and quiet operation of electric fans. Silver medals were awarded for improvements made in lighting fixtures; for the development of household heating appliances; and for a photoelectric cell.

feet and 80 x 100 feet at 1201 South Sixth street.

BOSTON—Pierce Arrow Sales Corp., 1065 Commonwealth avenue, will build a 3-story service station and salesroom, 100 x 304 feet, for which metalworking equipment will be required. Harold Jewett Cook, 438 Delaware avenue, Buffalo, is architect.

BOSTON—Jones & Polson Inc. has been incorporated with $20,000 capital to manufacture automobile accessories by Robert P. Polson president, 390 Pond street, South Weymouth, Mass., Herbert M. Jones, treasurer, 16 Ridgemont street, Allston, Mass.

TAUNTON, MASS.—New Process Twist Drill Co. will rebuild its burned plant and will require new equipment.

DETROIT—Piston Service Co., 1228 Michigan avenue, has let contract to H. G. Christman Co., Stevens building, for a 2-story operating building 50 x 130 feet.

DETROIT—New York Bed Spring Mfg Co., 638 Brady avenue, is having plans made for a 2-story plant 65 x 100 feet, by I. M. Lewis, Congress building.

DETROIT—American Brass & Iron Co. will remove its operations from 6425 Crystal street to the Twelfth Street Terminal building where it will increase its facilities for production.

DETROIT—Ternstedt Mfg. Co., a subsidiary of the Fisher Body Corp., has started construction of a crane runway and enameling plant, as the first unit of its present construction program.

DETROIT—L. A. Young Industries Inc. has nearly completed first unit of its building program and will proceed immediately to build a power plant. Concern manufactures industrial conveying equipment.

DETROIT—Olds Motor Works, I. J. Reuter president and general manager, will build additions to its plant at Lansing, Mich., to increase capacity one-third, including enlarged heat treating and assembly facilities.

DETROIT—Giern & Anholtt Tool Works has been incorporated with $30,000 capital to manufacture tools, dies and jigs by J. B. Giern, 418 South Chalmers street, A. P. Anholtt, Algonac, Mich., and F. B. Horne, Detroit.

DULUTH—Lake Superior Steel Foundry Co. Inc. has been incorporated with a capital of $50,000 by Edward C. Congdon, 415 Hawthorne road.

DULUTH—Whitney Bros Sand & Gravel Co. has started work on a dock and screening plant at the foot of Twenty-first avenue west, and extending 500 feet into St. Louis bay.

MINNEAPOLIS—Bids will be taken about Jan. 1, on a 2 and 1-story, 100 x 500-foot factory building at Taft and Kennedy streets northeast by the Strong-Scott Mfg. Co., manufacturer of flour and mill machinery, to cost $200,000. Larson & McLaren, 308 Baker building, are the architects.

MINNEAPOLIS—Idaho Pole & Treating Co., 900 First National-Soo Line building, has begun work on improving its pole and treating plant at Seventh street and Thirtieth avenue northeast, including a 16 x 24-foot office, 12 x 16-foot hoist house, 19 x 33-foot metal clad boiler room, 21 x 31-foot reinforced concrete vat and sump, concrete foundation for steel storage tanks and concrete foundation for a derrick.

SAUK CENTER, MINN.—Great Northern railroad will build a 3-stall rounhouse.

ST. PAUL—Bids are being received by Arthur E. Eggert, city purchasing agent, for an airplane hangar, including machine shop and room for eight airplanes, to cost $35,000. Frank X. Tewes is the architect.

KANSAS CITY, MO.—Massey Harris Harvesting Co., Molan C. Thompson manager, 1308 West Twelfth street, is planning erection of an assembling station on Fairfax road.

KANSAS CITY, MO.—Old World Parfum Co. has been incorporated with $50,000 capital to manufacture vending machines by R. S. McClintock, 1212 Stratford road.

KANSA CITY, MO.—Gleaner Mfg. Co., Independence, Mo., manufacturer of harvesting machinery, will build a 1 and 2-story plant here.

SPRINGFIELD, MO.—Springfield Foundry Co., W. P. Powell manager, Concord avenue and Phelps street, is building a new plant at 316 West Mill street, which will be equipped with modern machinery.

ST. LOUIS—Standard Railway Equipment Co. has been incorporated by Roland S. Baker, 415 Pine street.

HELENA, MONT.—The $4,000,000 in improvements contemplated by the Mountain State Telephone & Telegraph Co., include the following: improve Billings plant; addition to Great Falls plant; extensions to cables at Anaconda, Bozeman and Butte; new circuits on Great Falls-Selby toll line; new toll line between Glendive and Culbertson; new central office and station equipment. J. N. Whittinghill, Helena, is the state manager.

McCOOK, NEBR.—Bids are being received by G. F. Moss, city clerk, for a waterworks system including tank, wells, pumps and about ½ miles of pipe, to cost $45,000. Bruce & Grupe, 710 Bankers Reserve Life building, Omaha, are the engineers.

PLATTSMOUTH, NEBR.—Nebraska Gas & Electric Co. has begun work on a large gas holder.

ATLANTIC CITY, N. J.—Gruen Electrical Co. has been incorporated with $125,000 capital to manufacture electrical supplies by Abraham J. Levin, Martin H. Gruen, Muriel H. Gruen, Gorson & Gorson, Atlantic City, are attorneys.

ELIZABETH, N. J.—Fremco Products Corp. has been incorporated with $50,000 capital to manufacture electrical appliances by Frederick M. Conrad, Hillside, N. J., Frank Callender, Newark, N. J., and George R. Walsh, Elizabeth, N. J.

HACKENSACK, N. J.—Bergen County Sign Co. has been incorporated with $100,000 capital to manufacture metal signs.

HARRISON, N. J.—Harrison Bolt & Nut Co., Second street, has given contract to William McEvoy, 420 Warren street, for a 2-story addition 100x100 feet. J. W. Baker, 111 North Fourth street, is architect.

JERSEY CITY, N. J.—Marlazar Inc. has been incorporated with 2500 shares no par value to manufacture vending machines by Hannah C. Fahrer, Long Island City, N. Y., Emily Marx and Thomas K. O'Brien, New York. Peaslee, Brigham & Gennert, New York, are attorneys.

MONTCLAIR, N. J.—Paragon Electric Corp. has been incorporated with 1250 shares no par value and has bought the plant of the Adams-Morgan Co. Inc., which will be enlarged and production increased. Henry W. Trimble, 484 Bloomfield avenue, Montclair, is an official.

PATTERSON, N. J.—James P. McNail & Son Inc. has been incorporated with $10,000 capital to manufacture and install sprinkler systems by James P. McNair Jr., Harrison K. Ackerman Jr. John L. Groggs, Patterson, N. J., is attorney.

UNION CITY, N. J.—Flash-O-Light Corp. of New Jersey has been incorporated with 100 shares no par value to manufacture devices for testing spark plugs by Henry J. Knoll, West New York, N. J., Fred Saperstein and Samuel Deutschman, Union City, N. J. John N. Patoff, Union City, N. J., is attorney.

BRONXVILLE, N. Y.—Lang & Good have been incorporated to manufacture ornamental hardware with 100 shares no par value by D. Struckpf, H. Silver and M. Hausman. Gallert, Hilborn & Raphael, 141 Broadway, are attorneys.

BROOKLYN, N. Y.—Bermore Lite Co. has been incorporated with $10,000 capital by B. Michaelson, and R. Berman. L. Benson, 106 East Ninety-fifth street, is attorney.

BROOKLYN, N. Y.—Pheoll Mfg. Co., 280 Broadway, New York, has leased space in the Bush Terminal building, South Brooklyn, for a factory branch.

BROOKLYN, N. Y.—Penn Brass & Bronze Works, 107 Dobbins street, will build a 2-story foundry 40 x 100 feet. G. Erda, 826 Manhattan avenue, is architect.

BROOKLYN, N. Y.—Tepco Lighting Fixture Corp. has been incorporated with $10,000 capital to manufacture lighting fixtures by A.

Tin, Terne Plate Output Up, Makers Down

Makers of tin and terne plate decreased from 30 in 1923 to 25 in 1925, but in that period their output increased 11.1 per cent in quantity and 16.1 per cent in value, states the department of commerce. Of the 25 establishments operating in 1925, nine were in Pennsylvania, six in Ohio, five in West Virginia, two each in Maryland and Indiana and one in Illinois. Detailed information concerning the industry follows:

	1925	1923
No. of establishments reporting	25	30
Products, total value	$190,917,778	$165,587,376
Tin plate and terne plate		
Pounds	3,661,837,667	3,296,551,763
Value	$188,610,849	$162,476,076
Tin plate		
Pounds	3,480,401,286	3,159,250,830
Value	$179,381,673	$154,636,231
Coke plate		
Pounds	3,424,407,663	3,083,383,143
Value	$175,626,381	$149,769,050
Charcoal plate		
Pounds	55,993,623	75,867,687
Value	$3,755,292	$4,867,181
Terneplate, including long terne		
Pounds	181,436,381	137,300,933
Value	$9,229,176	$7,839,845
All other products, including tin dross, scruff, scrap, etc., value	$2,306,929	$3,111,300
Equipment		
Number of dipping sets at end of		
Usually employed on sets at end of year	568	813
tin plate	525	765
Usually employed on terneplate	43	48
Daily capacity, single turn, pounds	6,333,568	6,188,700
Tin plate	6,544,700	5,851,500
Terneplate	388,868	337,200

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.50
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	10.00 to 11.00
North African low phosphorus	9.25 to 9.75
Swedish and Norwegian low phosphorus, 68 per cent	10.25 to 10.75
Swedish foundry or basic, 66 to 68 per cent	9.00 to 9.50
Spanish foundry or basic, 50 to 54 per cent	8.75 to 9.25
North African foundry and basic 50 to 54 per cent	8.50 to 9.50

(All foreign ore prices now nominal)

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum, 47 per cent	nominal
Indian, minimum 47 per cent	36 to 38 cents
Caucasian, 53 to 55 per cent Washed	40 cents

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, imported duty paid eastern tidewater, per ton	16.75 to 17.50

Cohen and S. Cohen. H. A. Richard, 233 Broadway, New York, is attorney.

BROOKLYN, N. Y.—Prahar Mfg. Co. has been incorporated with $10,000 capital to manufacture frames for purses by R. L. Prahar, L. B. Prahar and H. Wetstein. C. W. Brown, 215 Montague street, is attorney.

BUFFALO—Acme Steel & Malleable Iron Works Inc., D. Carson president, 245 Military road, has let general contract to J. W. Cowper Co. Inc., 725 Fidelity building, for a 1-story factory addition 60 x 200 feet.

BUFFALO—Chevrolet Motor Co., Cornwall and Delevan avenues, has let contract to the John W. Cowper Co., Fidelity building, for 1-story addition to its assembly plant, 160 x 245 feet, for parts production and service.

BUFFALO—United Dairy Machinery Corp. has been incorporated with $100,000 capital to manufacture motor trucks and other products by E. G. Dietrich, N. L. Miller and D. H. Gowing Jr. Melvin & Melvin, Syracuse, are attorneys.

LONG ISLAND CITY, N. Y.—Voras Co., 148 Webster avenue, iron works, is having plans made by R. L. Lukowsky, 119 Newton avenue, architect, for a 2-story plant 50x100 feet.

NEW YORK—Columbia Metal Box Co., 246 East 144th street, will build a 3-story plant 100x132 feet.

NEW YORK—Empire Brick & Supply Co., Wright P. Giss chairman, 103 Park avenue, will build a new plant and power house at Stockport, N. Y.

NEW YORK—Altmar Steel Products Co. has been incorporated with $10,000 capital by A. Daniels, M. Rosen and H. Bovis. H. G. Guttman, 292 Madison avenue, is attorney.

NEW YORK—Fred J. Ryan has been incorporated with $150,000 capital to manufacture radiators by F. J. Ryan, A. C. Ryan and M. S. Worth. J. W. Keller, 217 Broadway, is attorney.

NEW YORK—Guran & Copelson Iron Works has been incorporated with $6000 capital by B. Gurian, C. Gurian and C. Copelson. Rivkin & Rivkin, 1626 Pitkin avenue, are attorneys.

NEW YORK—Daly Pressing Machine Corp. has been incorporated with $5000 capital to manufacture machinery by M. Flood, and C. Frankl. J. P. Broomell, 17 East Forty-third street, is attorney.

NEW YORK—Groove Lock Co. has been incorporated with 400 shares no par value by W. M. Smith, L. B. Baker and R. L. Sugarman. McLaughlin & Stern, 15 William street, are attorneys.

NEW YORK—Kant Fall Hangers has been incorporated with $100,000 capital to manufacture garment hangers by B. Weiss, and I. F. Vofel. M. Altman, 280 Madison avenue, is attorney.

NEW YORK—Nie-Spen Oil Burner Corp. has been incorporated with $5000 capital to manufacture oil burning devices by J. F. Spencer, F. B. Spencer and J. F. Niebuhr. W. K. Elliffe, 256 Broadway, is attorney.

NEW YORK—Dipersion Process Co. has been incorporated with $25,000 capital and 2500 shares no par value to manufacture dispersion machinery by J. L. Feeney, D. D. Farr and T. Wolf. Greene & Hurd, 52 Broadway, are attorneys.

NEW YORK—Mechanical Vending Corp. of New York has been incorporated with $150,000 capital to manufacture automatic vending machines by H. B. Bond, L. A. Fosse and M. Wing. Miller, Otis, Farr & Henderson, 71 Broadway, are attorneys.

NEW YORK—International Alloys Co. has been incorporated with 3000 shares no par value to mine and refine metals by M. M. Carey, R. B. Fenner and H. S. Lockwood. Babbage & Sanders, 111 Broadway, are attorneys.

NEW YORK—Radial Lubrication Corp. has been incorporated with $25,000 capital and 1000 shares no par value to manufacture tools by L. S. Breckenridge, W. L. F. Gardner and F. Ryan. Edwards, Murphy & Minton, 26 Liberty street, are attorneys.

NEW YORK—Raybest Novelty & Mfg. Co. has been incorporated with $24,000 capital to manufacture furniture trimmings by D. J. Kelman, and J. Kasper. R. S. Dubois, 217 Havemeyer street, Brooklyn, N. Y., is attorney.

NEW YORK—Radioear Corp. has been incorporated with $50,000 capital and 1500 shares no par value to manufacture hearing devices by H. L. Williams, H. C. Lake and A. H. Zachs. Schaffer & Lake, 1463 Broadway, are attorneys.

WINSTON-SALEM, N. C.—Carolina Iron Co. has been incorporated as the successor to the Carolina Foundry & Machine Co., by C. M. Thomas, president. Will remodel and enlarge plant and equipment at Chestnut street and Southern railroad.

FARGO, N. DAK.—Union Light, Heat & Power Plant Co. will remove two old boilers in power plant and install a new 900-horsepower boiler, and two new steam turbines. A S. King is the chief engineer.

CANTON, O.—Luehrs Co., manufacturer of industrial machinery, will build a 1-story plant 120 x 150 feet at Genoa Crossing and the Pennsylvania railroad tracks.

CINCINNATI—Prest-O-Lite Co. will build a plant on a 15-acre site in Oakley, O., on the Baltimore & Ohio line, continuing operation of its plant at North Fairmount, O.

CINCINNATI—Chevrolet Motor Co. has let contract to Ferro Concrete Construction Co. for a 1-story addition to its plant at Norwood, a suburb, for parts production and service.

CLEVELAND—American Stove Co., 4415 Perkins avenue, has let contract to J. C. F. Shafer, Smythe building, for a 1-story plant 52 x 182 feet at 4500 Hough avenue.

DAYTON, O.—Dayton Structural Steel Co., J. A. Burger president, has bought seven acres in North Dayton for future expansion.

GALION, O.—Galion Metallic Walk Co. has let contract for a 1-story addition.

PROVIDENCE, R. I.—Builders Iron Foundry Co., 9 Codding street, Z. Chafee president and treasurer, is considering revised plans for a 1-story foundry, previous bids being rejected.

CHATTANOOGA, TENN.—United States Cast Iron Pipe & Foundry Co. is having plans sketched for a new plant on its Tannery Flats site. A crane building is being erected on this site at present.

MEMPHIS, TENN.—Swayne Wilson Inc. has been incorporated with $10,000 capital to manufacture shock absorbers by J. Swayne Wilson and L. D. Bates.

MEMPHIS, TENN.—Moore & Culligan Co., 270 Union street, wrought iron products, has leased a building built by Linden Development Co. and will move its production there.

NASHVILLE, TENN.—Allen Mfg: Co. will remodel and enlarge its machine shop and equipment at Tenth and Cedar streets.

DALLAS, TEX.—Securbo Lock, Bolt & Nut Co. has been incorporated by W. Neil Johnson, Beverly drive.

OGDEN, UTAH—Union Pacific Railway Co., Fifteenth and Farnam streets, Omaha, Nebr., will build a roundhouse to cost $200,000.

CEDAR GROVE, WIS.—A charter has been granted to the Cedar Grove Tool & Forge Co., capital stock $25,000. The incorporators are G. W. Hyink, E. A. Spaulding and H. C. Gahn.

CHIPPEWA FALLS, WIS.—Northern States Power Co. has announced its intention to build a hydroelectric generating plant on the Chippewa river in this city at a cost of nearly $3,000,000, following the decision of the city government to abandon is plans to purchase the present electric light distribution system. The Northern company owns the Wissota dam, one of the largest developments of the Chippewa river, built about twelve years ago. It has a capacity of 32,000 kilowatts. The proposed new dam will have an 18,000-kilowatt capacity. The general contract is held by the Byllesby Engineering & Management Corp.

EAGLE RIVER, WIS.—Gray Well Drilling Co., Milwaukee, is the successful bidder for the complete work of providing a water supply for the proposed new municipal water plant at $27,500. W. F. Reichardt, Watertown, Wis., is consulting engineer.

GLIDDEN, WIS.—Lake Superior District Power Co. will build a high tension line from Mellen to Glidden and will install new equipment in the Glidden power plant.

MADISON, WIS.—Central Wisconsin Power Co. Inc. has been incorporated by Ray W. Clarke and Francis Lamb.

MILWAUKEE—Milwaukee Gas Tool Corp., capital stock 1000 no par common shares, has been incorporated by J. W. Graf, James A. Mould and Ralph M. Hoyt, attorney, to engage in manufacturing. Definite plans have not been revealed as yet.

Business in Canada

COCHRANE, ONT.—Abitibi Power & Paper Co., Iroquois Falls, Ont., is planning to build a newsprint mill here to have a daily capacity of 200 tons and cost $600,000.

HAMILTON, ONT.—Porritt's & Spencer, (Canada), Ltd., Lotteridge street, manufacturer of paper, felt, etc., is building addition to factory here, and will shortly require some additional machinery.

LAKEFIELD, ONT.—Canada Cement Co., Ltd., Phillips square, Montreal, Que., has started work on a cement plant here, which will include 10 buildings. The company will purchase material and equipment for same.

LONDON, ONT.—Bextor Gear & Tool Co., Ltd. has been incorporated to manufacture tools and carry on machine and foundry business with a capital of $500,000 and 100,000 shares of no par value by Samuel Bexton, George H. Hardy, Mabel Bexton and others.

NIAGARA FALLS, ONT.—Herbert Morris Crane & Hoist Co., here, has received the following crane orders: For the plant of the Ste. Anne Pulp & Paper Co., Ste. Anne de Beaupre, Que., 9 cranes, two of which are electric, 4 pneumatic and 3 hand operated, as well as chain blocks and trolleys. For the Canada Paper Co.'s mills at Windsor Mills, Que., one 10-ton electric crane. For the Asbestos Corp. of Quebec, two 15-ton hand operated cranes.

OAKVILLE, ONT.—Bids are being received by the board of water and light commissioners for one low lift turbine pump and electric motor; and one high lift turbine pump with electric motor. W. N. Robinson is chairman of the board. George H. Power, Toronto, is engineer.

ST. CATHARINES, ONT.—S. G. Walton Ltd. has been incorporated to manufacture and deal in hardware, with $40,000 capital stock by Samuel G. Walton, George B. Burson, Robert Johnson and others.

TORONTO, ONT.—Rouyn Copper Gold Mines, Ltd. has been incorporated to mine, smelt and refine ores, metals and minerals, with $100,000 capital stock by Ernest E. Newton, James G. Kelly, Hazel F. Cline and others.

TORONTO, ONT.—Wiltsey Coghlan Mines Ltd. has been incorporated to mine, smelt and refine ores, metals and minerals, with $3,000,000 capital stock by Francis A. Blackburn, Hugh J. Dawson, Agnes Moulton and others.

AYLMER, QUE.—Nesbitt, Thompson & Co., 145 St. James street, Montreal, Que., propose to start work soon on a large paper mill between Deschenes and Aylmer, Que. The undertaking includes the construction of a large power development plant in this district. Expenditure on the project will be approximately $4,000,000.

MONTREAL, QUE.—Auto Safety Lock Ltd. has been incorporated to manufacture and deal in electrical appliances and carry on the business of iron foundry and mechanical engineer with $100,000 capital stock by Alexander P. Mathieu, Emma O'Hara, Alexina Maille.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$40.00 to 43.00
Pennsylvania, No. 2	35.00 to 38.00
Ohio, No. 1	40.00 to 43.00
Ohio, No. 2	35.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	40.00 to 43.00
Kentucky, No. 2	38.00 to 40.00
Missouri, No. 1	40.00 to 43.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	40.00 to 45.00
Maryland, No. 2	36.00 to 40.00
Georgia and Ala. No. 1	40.00 to 45.00
Georgia and Ala. No. 2	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Chicago	52.00
Birmingham	52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	45.00

New Trade Publications

MOTOR BASES—Pedestal bases for vertical motors are described in a bulletin by the General Electric Co., Schenectady, N. Y. Features making them adaptable to various uses are illustrated.

GRINDERS—A bulletin has been issued by the Cincinnati Grinders Inc., Cincinnati, O., describing its plunge cut grinders, the first description of this type of machine as developed by this company.

REFRACTORY CEMENT—Botfield Refractories Co., Philadelphia, has issued a booklet quoting from letters from users of its fire brick cement, illustrated by work done in various installations by its use.

STEEL CASTINGS—Industrial Steel Casting Co., Toledo, O., is issuing a series of bulletins covering industrial castings of steel for various uses, well illustrated and suggesting uses of steel castings in various branches of industry.

FLOW METER—A leaflet by the Brown Instrument Co., Philadelphia, describes its flow meter for use in steam plants to give information as to the efficiency of fuel consumption. It records on one sheet the total flow of steam and the rate of flow, thus giving complete data as to any given period.

STAMPINGS—Geuder, Paeschke & Frey Co., Milwaukee, manufacturer of metal stampings, has issued a bulletin calling attention to various forms of stampings for diversified purposes. It is well illustrated to show the variety of forms into which metal may be drawn adaptable to commercial uses in various industries.

TRANSFORMER TAP CHANGERS—A bulletin by the Wagner Electric Corp., St. Louis, describes and illustrates its devices for changing taps quickly and conveniently in any kind of weather. Features are included to prevent incomplete change of taps and the device can be locked to prevent any but authorized hands gaining access.

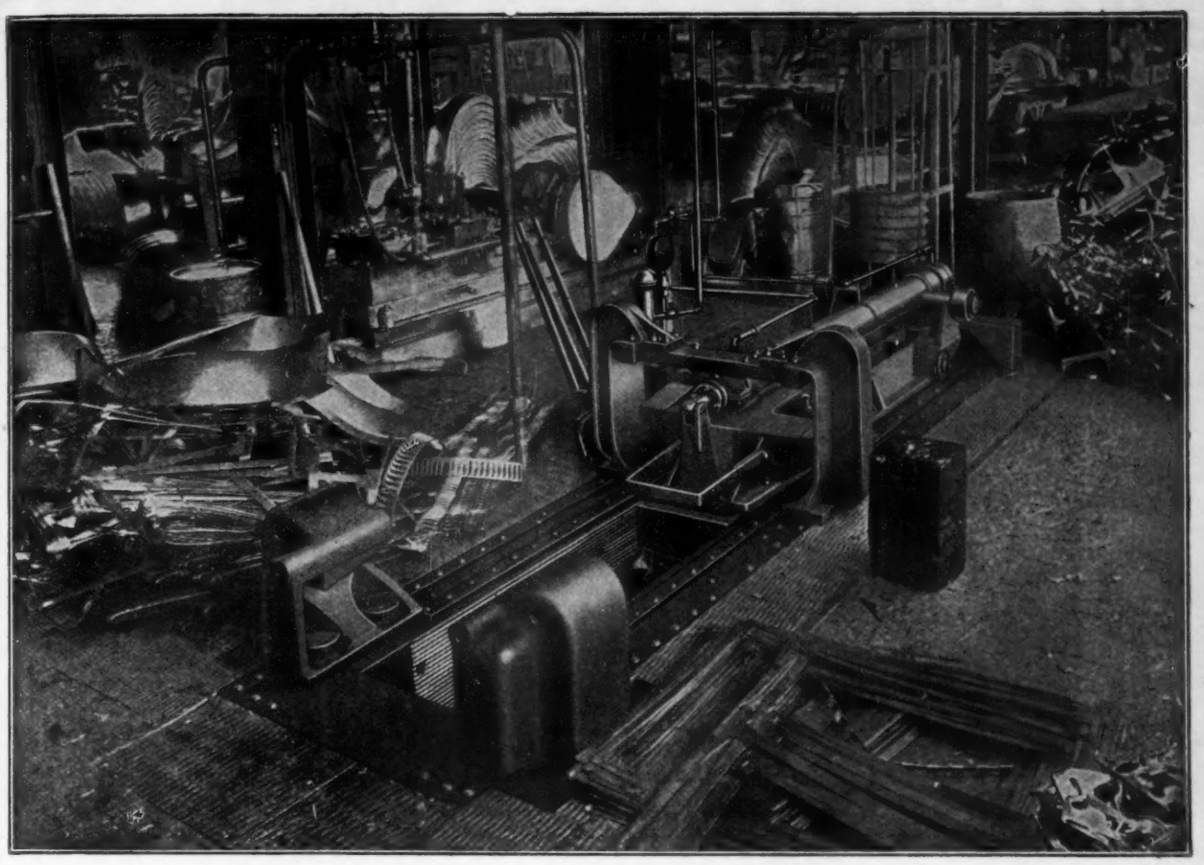
OIL HEATERS—Devices to burn oil in a spray with compressed air, for winter use in construction, are described and illustrated in a catalog by the Aeroil Burner Co. Inc., Union City, N. J. Use of these burners and other apparatus in concrete heaters, thawing torches, mortar heating pans, salamanders, water heaters and furnaces is illustrated.

GRINDER—A bulletin by the Machinery Co. of America, Big Rapids, Mich., calls attention to recent developments in grinding of edges, surfaces and faces. It features especially a 220-inch cabinet base traveling wheel grinder. In this the table is stationary and the grinding member moves, giving greater solidity and lessened space.

RUST PREVENTION—Causes of corrosion of iron and steel surfaces and suggestions as to means to prevent it are contained in a booklet issued by the Quigley Furnace Specialties Co. Inc., New York. Coatings designed to prevent the start of corrosion and to protect metal surfaces against the action of atmosphere and acid fumes are described.

WELDING HEAD—General Electric Co., Schenectady, N. Y., has issued a bulletin describing an automatic welding head and control. It describes the device and illustrates its parts and operation. The electrode is automatically touched to the work and immediately withdrawn to form the arc. The action of the machine is described as more rapid and accurate than the best hand work.

SPECIAL STEEL—Jones & Laughlin Steel Co., Pittsburgh, has issued a handbook for the guidance of those interested in the use of the new steel recently put on the market by this company. It is a product combining fast machinability with case carburizing and forging qualities. The booklet contains 50 pages, 4½ x 7 inches, illustrated and containing complete technical information and instructions on the use of the new steel. Among chapter headings are: Characteristics; Machinability; Physical Properties; Hot-Rolled and Cold-Drawn; Heat Treatments; Case Carburizing and Forging.



Typical Installation in Well-Known Automobile Plant

WHY SHEET-SCRAP CAN BE PROFITABLY COMPRESSED

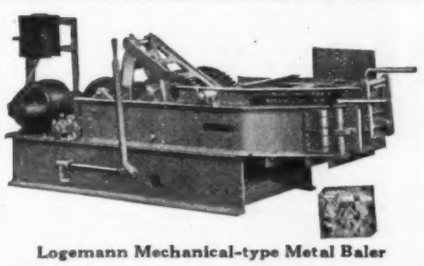
It commands at all times the best price;
It can be more conveniently stored;
It can be more economically handled;
It can be readily held for favorable markets;
It practically eliminates corrosion;
It permits of loading cars to capacity;
It saves much heat in remelting.

LOGEMANN SCRAP-METAL PRESSES

Hydraulic and Mechanical Types

LOGEMANN BROTHERS COMPANY
3126 Burleigh St. Milwaukee, Wis.

Also presses making crucible-size bricks of copper, brass, aluminum and other metals.



Logemann Mechanical-type Metal Baler

Please indicate character of scrap, quantity and heaviest gauge, when writing.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

⅛-inch	42	32½
¼ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	45	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

⅛ and ¼-inch	+11	+39
⅜-inch	22	2
½-inch	28	11
¾ to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
8 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

⅛ and ¼-inch	+19	+54
⅜-inch	21	7
½-inch	28	12
¾ to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2½-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	36 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.20 per cent.....50 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot. Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot..... .20c

Plates over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot" ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

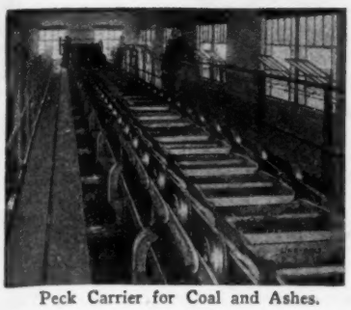
Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared wiht re-entrant angles)

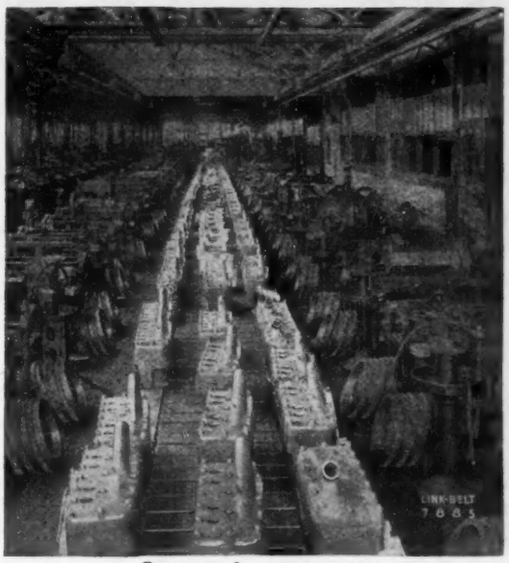
Additional extra ..... .20c

For Material Handling and Power Transmission

See the Nearest Link-Belt Engineer

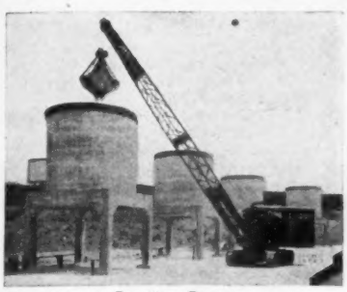


Peck Carrier for Coal and Ashes.

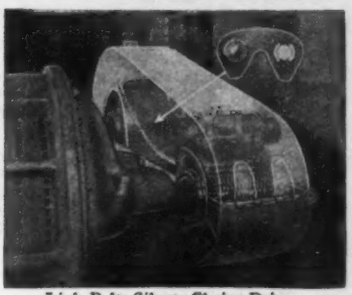


Conveyors for every purpose.

Belt Conveyor.



Crawler Crane.



Link-Belt Silent Chain Drive.

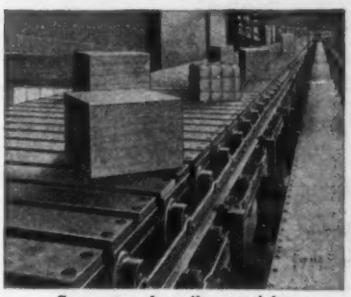
Portable Loader.

SAVING time and labor, and transmitting power with greater efficiency, at lower costs, and in larger volume than would otherwise be possible—these are some of the important results being accomplished with Link-Belt machinery.

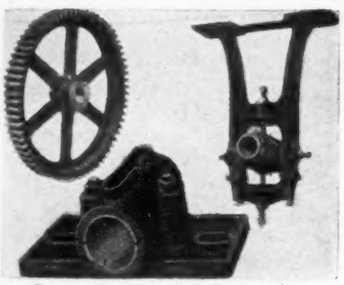
For handling raw and finished materials, Link-Belt conveyors, elevators, cranes and practically every other type of mechanical handling equipment, are effectively employed.

For the transmission of power, Link-Belt Silent Chain, and other types of Link-Belt chain drives are widely used.

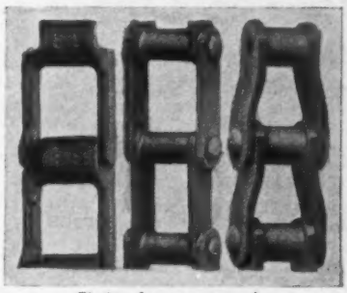
To find out how you can handle materials and transmit power more economically, address nearest Link-Belt office.



Conveyors for all materials.



Power Transmission Accessories.



Chains for every service.

2917

LINK-BELT COMPANY

CHICAGO, 300 W. Pershing Road — INDIANAPOLIS, 200 S. Belmont Ave. — **PHILADELPHIA**, 2045 Hunting Park Ave.

Atlanta, - - - 511 Haas-Howell Bldg.
Birmingham, Ala. - 720 Brown Marx Bldg.
Boston - - - - - 1103-4 Statler Bldg.
Buffalo - - - - - 554 Ellicott Square
Cleveland - - - - - 527 Rockefeller Bldg.
Denver - - - - - 520 Boston Bldg.
Detroit - - - - 5938 Linsdale Ave.
Huntington, W. Va. - Robson-Prichard Bldg.
Kansas City, Mo., R.436, 1002 Baltimore Ave.
Louisville, Ky. - - - - 321 Starks Bldg.
New Orleans - 504 New Orleans Bank Bldg.
New York - - - - 2676 Woolworth Bldg.
Pittsburgh - - - - - - 335 Fifth Ave.
St. Louis - - - - - - - 3638 Olive St.
Toronto 2, and Montreal, Link-Belt Limited
Wilkes-Barre - 826 Second Nat'l Bank Bldg.

H. W. CALDWELL & SON CO.:—Chicago, 1700 S. Western Ave.; Dallas, Texas, 810 Main St.; New York, 2676 Woolworth Bldg.

LINK-BELT MEESE & GOTTFRIED CO.:—San Francisco, 19th and Harrison Sts.; Los Angeles, 361-369 So. Anderson St.; Seattle, 820 First Ave., S. Portland, Ore., 67 Front St.; Oakland, Calif., 526 Third St.

LINK-BELT

"Where-To-Buy"

A classified-by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶Index to advertisements will give you page number of any advertisers and by referring to advertisement you can get full particulars about products.

ACCUMULATORS
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Lagemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

ACETYLENE (Dissolved)
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACETYLENE GENERATORS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
Internaitonal Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

ALUMINUM (Vanadium)
Vanadium Corp., of America, 120 Broadway, New York City.

ALUMINUM TUBING
Summerill Tubing Co., Bridgeport, Pa.

ANGLES, TEES, CHANNELS—See STEEL (Structural)

ANNEALING BOXES
Adamson Machine Co., The, Akron, Ohio.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Pittsburgh Malleable Iron Co., 34th & Smallman Sts., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Zanesville Malleable Co., Zanesville, O.

ANTIGLARE PREPARATION
Skybryte Co., The, Keith Bldg., Cleveland, O.

APPRAISALS
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., The, 3675 E. 78th St., Cleveland, O.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Transue & Williams Steel Forging Corp., Alliance, O.

BABBITT METAL
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.

BALING PRESSES
Cox & Sons Co., The, Bridgeport, N. J.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

BAND SAWS (Metal Cutting)
Huther Bros. Saw Mfg. Co., 1190 University Ave., Rochester, N. Y.

BANDS AND HOOPS (Galvanized Strips)
Sharon Steel Hoop Co., Sharon, Pa.

BANDS (Iron)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Welded Iron and Steel)
Akron-Selle Co., Akron, O.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., 71 Broadway, New York City.

BARRELS (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BARS (Alloy)
Central Alloy Steel Corp., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

BARS (Concrete Reinforcements)
Bethlehem Steel Co., Bethlehem, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Truscon Steel Co., Youngstown, O.

BARS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Morris, Wheeler & Co., 30th and Locust Sts., Philadelphia, Pa.
Penn Iron & Steel Co., Creighton, Pa.
Republic Iron & Steel Co., Youngstown, O.
Truscon Steel Co., Youngstown, O.

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Alloy Steel Corp., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Calif.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS, STEEL (Electric Furnace)
Timken Roller Bearing Co., The, Canton, O.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Blystone Mfg. Co., Ironton St. Cambridge Springs, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Phoenix Iron Co., The, 20 So. 15th St., Philadelphia, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BEARINGS (Ball)
Hoover Steel Ball Co., Ann Arbor, Mich.
New Departure Mfg. Co., The, Bristol, Conn.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Journal)
Hyatt Roller Bearing Co., Newark, N. J.
Keystone Bronze Co., 39th St., Pittsburgh, Pa.

BEARINGS (Motor)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.

BEARINGS (Roller)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Timken Roller Bearings Co., The, Canton, O.

BEARINGS (Thrust)
Hoover Steel Ball Co., Ann Arbor, Mich.
Norma-Hoffman Bearings Corp., Stamford ,Conn.
Timken Roller Bearing Co., The, Canton, O.

BELT LACING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.

BELTING (Chain)
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.

BELTING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.

BENCHES AND FRAMES (Drawing)
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

BENDING AND STRAIGHTENING MACHINES
Cleveland Punch & Shear Works Co., 3917 St. Clair Ave., Cleveland, O.
Hinman, D. A., & Co., Sandwich, Ill.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

BILLETS (Forging)
Bethlehem Steel Co., Bethlehem, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.

BILLETS (Forging, Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BILLETS (Tool Steel)
Union Electric Steel Corp., Frick Bldg., Pittsburgh, Pa.

BILLETS AND BLOOMS
American Rolling Mill Co., Middletown, O.
American Tube & Stamping Plant, The, Stanley Works, The, Bridgeport, Conn.
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Central Alloy Steel Corp., Massillon, O.
Columbia Steel Co., The, Standard Life Bldg., Pittsburgh, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Illinois Steel Co., 208 South La Salle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Wheeling Steel Corp., Wheeling, W. Va.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Below